ANNEXURE C

Victor & Partners Inc.
ATTORNEYS | NOTARIES | CONVEYANCERS

Telephone number: +27 11 831 0000
E-mail Address:
francis@victorandpartners.co.za

Unit 10, 2nd Floor Highcliff Office Park
Cnr Wilhelmina Ave & Christiaan De Wet Rd
Constantia Kloof, Roodepoort, 1724

PO Box 21727, Helderkruin, 1733
Docex 4 Kempton Park
Lodgement Numbers: PTA: 1265

Ons Verw / Our Ref: F Bolleurs
U Verw / Your Ref:

26 March 2025

EMFULENI LOCAL MUNICIPALITY
By Email

Dear Sirs

CONVEYANCER'S CERTIFICATE IN TERMS OF THE PROPOSED VAAL AEROTROPOLIS DEVELOPMENT

I, the undersigned,

FRANCIS BOLLEURS

hereby certify that:

1. **GENERAL:**

I am a duly qualified and admitted conveyancer, practicing at Roodepoort, Gauteng, and I sign this certificate in order to indicate:

1.1 The description of the properties on which the proposed phase 1 of the Vaal Aerotropolis Development will take place;

1.2 The various title conditions contained in the respective Title Deeds relating to the respective properties on which Vaal Aerotropolis Development will take place;

1.3 The way in which these title conditions must be disposed of for township establishment purposes;

1.4 The particulars of the registered owners of the properties;

1.5 The particulars of the Mortgage Bonds registered over the properties;

1.6 The particulars of the holders of the rights to minerals;

1.7 Conveyancing steps to be followed before or simultaneously with the opening of the township register

2. **PROPERTY DESCRIPTIONS:**

Phase 1 of the proposed Vaal Aerotropolis Development establishment will take place on the following properties:

2.1 Portion 2 of the Farm Tweefontein 523,
Registration Division IQ, Province of Gauteng

Measuring 888,4592 (Eight Hundred and Eighty Eight Comma Four Five Nine Two) Hectares

Held by Deed of Transfer T68014/2023

2.2 Farm Klipfontein 674,
Registration Division IQ, Province of Gauteng

Measuring 339,0678 (Three Hundred and Thirty Nine Comma Zero Six Seven Eight) Hectares

Held by Deed of Transfer T68014/2023

2.3 Remainder of Portion 9 (a Portion of Portion 3) of the Farm Rietkuil 554,
Registration Division IQ, Province of Gauteng

Measuring 189,7478 (One Hundred and Eighty Nine Comma Seven Four Seven Eight) Hectares

Held by Deed of Transfer T68017/2023

2.4 Portion 26 of the Farm Rietkuil 554,
Registration Division IQ, Province of Gauteng

Measuring 85,6532 (Eighty Five Comma Six Five Three Two) Hectares

Held by Deed of Transfer T68017/2023

2.5 Remaining Extent Portion 3 of the Farm Rietkuil 554,
Registration Division IQ, Province of Gauteng

Measuring 85,6532 (Eighty Five Comma Six Five Three Two) Hectares

Held by Deed of Transfer T68017/2023

2.6 Remainder of Portion 6 of the Farm Vlakplaats 555,
Registration Division IQ, Province of Gauteng

Measuring 85,6532 (Eighty Five Comma Six Five Three Two) Hectares

Held by Deed of Transfer T68016/2023

2.7 Portion 18 (a portion of portion 6) of the Farm Vlakplaats 555,
Registration Division IQ, Province of Guateng

Measuring 79,6403 (Seventy Nine Comma Six Four Zero Three) Hectares

Held by Deed of Transfer T68016/2023

2.8 Portion 7 of the Farm Vlakplaats 555,
Registration Division IQ, Province of Gauteng

Measuring 255,2465 (Two Hundred and Fifty Five Comma Two Four Six Five) Hectares

Held by Deed of Transfer T68016/2023

2.9 Portion 51 of the Farm Vlakplaats 555,
Registration Division IQ, Province of Gauteng

Measuring 801,9251 (Eight Hundred and One Comma Nine Two Five One) Hectares

Held by Deed of Transfer T68017/2023

2.10 Portion 20 of the Farm Vlakplaats 555,
Registration Division IQ, Province of Gauteng

Measuring 6,8523 (Six Comma Eight Five Two Three) Hectares

Held by Deed of Transfer T68017/2023

2.11 Remaining Extent of Portion 17 of the Farm Vlakplaats 555,
Registration Division IQ, Province of Gauteng

Measuring 169,2090 (One Hundred and Sixty Nine Comma Two Zero Nine Zero) Hectares

Held by Deed of Transfer T68017/2023

2.12 Portion 52 of the Farm Vlakplaats 555,
Registration Division IQ, Province of Gauteng

Measuring 374,3061 (Three Hundred and Seventy Four Comma Three Zero Six One) Hectares

Held by Deed of Transfer T68017/2023

2.13 Portion 5 of the Farm Vlakplaats 555,
Registration Division IQ, Province of Gauteng

Measuring 101,4648 (One Hundred and One Comma Four Six Four Eight) Hectares

Held by Deed of Transfer T68018/2023

2.14 Remaining Extent of the farm Klipkop No 530,
Registration Division IQ, Province of Gauteng

Measuring 1031,8770 (One Thousand and Thirty One Comma Eight Seven Seven Zero) Hectares

Held by Deed of Transfer T46824/2007

2.15 Remaining Extent of Portion 47 of the Farm Klipfontein 530,
Registration Division IQ, Province of Gauteng

Measuring 1365,8921 (One Thousand Three Hundred and Sixty Five Comma Eight Nine Two One) Hectares

Held by Deed of Transfer T5973/2007

3. **<u>EXISTING CONDITIONS OF TITLE AND HOW THEY WILL BE DEALT WITH IN THE CONDITIONS OF ESTABLISHMENT:</u>**

3.1. **Portion 2 of the Farm Tweefontein 523** is subject to the following conditions:

1. *Kragtens Notariële Akte No 1481/73S geregisteer op 11 Oktober 1973 is die reg verleen aan die ELETRISITIETSVOORSIENGSKOMMISSIE om elektrisiteit oor die eiendom te Vervoer, tesame met bykomende regte en onderhewig aan kondisies soos meer ten volle sal blyk uit die lyn a b op kaart SG No A4067/11 geheg aan die Akte van Transport Nr 7859/1912.*

2. *Die eienaar van die eiendom Hiermee getranspoteer is geregtig tot het water van de fontein gelegen op gedeelte "A" van gezegde plaats groot 888,4592 Hektaar getransporteerd aan HENDIK ALBERTUS FOURIE op 17 September 1912 krachtens Akte van Transport No 7858/1912, voor zeven achtereenvolgende dagen en nachten uit iedere vertien dagen met het recht op gezegde gedeelte "A" naar dit gedeelte te vervoeren.*

3.2. **Farm Klipfontein 674** is subject to the following conditions:

1. *Die voormalige Resterende gedeelte van Gedeelte 1 van die plaas Tweefontein 523 is onderhewig aan die volgende voorwaarde: Die figuur A B C D E F G H J K L M N P*

Y, uitgesluit die figuur W X Y Z soos aangedui op Diagram SG No. 1673/2003 stel voor.

2. *Gesegde Resterende Gedeelte, Hiermee getransporteer, is geregtig tot vrye en onbelemmerde suiping vir groot en klein vee in die fontein geleë op gesegde Resterende Gedeelte Hiermee gretransporteer, en tot die water van gesegde fontein vir sewe agtereenvolgende dae en nagte uit iedere 14 dae en onderhewig aan die reg ten gunste van Gedeelte "B" van Transport Nr. T7859/1912 tot die water van gesegde fontein vir sewe agtereen volgende dae en nagte uit iedere 14 dae en om gesegde water oor gesegde eiendom Hiermee hetransporteer na gesegde Gedeelte "B" te Vervoer.*

3.3. **Remainder of Portion 9 (a Portion of Portion 3) of the Farm Rietkuil 554** is subject to the following conditions:

1. *Die regte van die Staatpresident soos bepaal in Artikel vier-en-dertig van die Kroongrond Nederzettings Wet, 1912, betreffende sekere werke op die grond.*

2. *Kragtens Notariële Akte K1141/1976S is die reg aan ESKOM verleen om elektrisiteit oor die hierin vermelde eiendom te Vervoer, tesame met bykomende regte en onderworpe aan voorwaardes oos meer volledig sal blyk uit gesegde Notariële Akte.*

3.4. **Portion 26 of the Farm Rietkuil 554** is subject to the following conditions:

1. *Die regte van die Staatpresident soos bepaal in Artikel vier-en-dertig van die Kroongrond Nederzettings Wet, 1912, betreffende sekere werke op die grond.*

2. *Kragtens Notariële Akte K1141/1976S is die reg aan ESKOM verleen om elektrisiteit oor die hierin vermelde eiendom te Vervoer, tesame met bykomende regte en onderworpe aan voorwaardes oos meer volledig sal blyk uit gesegde Notariële Akte.*

3.5. **Remaining Extent Portion 3 of the Farm Rietkuil 554** is subject to the following conditions:

1. *Die regte van die Staatpresident soos bepaal in Artikel vier-en-dertig van die Kroongrond Nederzettings Wet, 1912, betreffende sekere werke op die grond.*

2. *"SUBJECT to the right granted to ESKOM to convey electricity over the hereinmentioned property together with ancillary rights and subject to the conditions as will more fully appear from Deed of Servitude 1382/958."*

3.6. **Remainder of Portion 6 of the Farm Vlakplaats 555** is subject to the following conditions:

1. *"DE eigenaar van gedeelte "E" (1/2 aandeel in het restrenende gedeelte waarvan hieronder gheouden wordt) is gerechtigd tot zuiping voor zign vee in de dam gelegen op gezegde gedeelte "E" en gedeelte F.H. en J van de plaats voormeld getransporteerd krachtens Akten van Transport Nos. 10409/1921, 10407/1921 en 1041/1921 met recht van toegang.*

3.7. **Portion 18 (a portion of portion 6) of the Farm Vlakplaats 555** is subject to the following conditions:

1. *"DE eigenaar van gedeelte "E" (1/ aandeel in gedeelte 1 waarvan hieronder gehou wordt) is gerechtigd tot zuiping voor zign vee in de dam gelegen op gezegde gedeelte F.H. en J van de plaats voormeld, getransporteerd krachtens Akten van Transport Nos. 10408/1921, 10409/1921, 10407/1921 en 10410/1921 met recht van toegang.*

2. *KRAGTENS Notariële Akte No. 140/53S geregisteer op 19 Februarie 1953, is die reg aan die ELEKTRISITEITSVOORSIENINGSKOMMISSIE verleen om elektrisiteit oor die eiendom Hiermee getransporteer te Vervoer, tesame met bykomende regte, en onderhewig aan kondisies, soos meer volledig sal blyk uit genoemde Notariële Akte.*

3. *KRAGTENS Notariële Akte No. K3160/74 geregisteer op 11 Desember 1973, is die reg aan die ELEKTRISITEITSVOORSIENINGSKOMMISSIE verleen om elektrisiteit oor die eiendom Hiermee getransporteer te Vervoer, tesame met bykomende regte, en onderhewig aan kondisies, soos meer volledig sal blyk uit genoemde Notariële Akte*.

3.8. **Portion 7 of the Farm Vlakplaats 555** is subject to the following conditions:

1. *"DE eigenaar van het eigendom onder deze Akte gehouden is gerechtigd om water te leiden, voor besproeiings doeleindes voor 26 uren uit iedere 7 dagen, uit zekere dam gelegen op het eigendom onder deze Akte gehouden en gedeelten E, H en J van plaats voormeld, op 6 Oktober 1921 getransporteerd krachtens Akten van Transport Nos. 10408/1921, 10407/1921 en 10410.*

2. *ONDERWORPOEN ten feveure van die eiegenaren van gedeelte J voormeld en gedeelten K, L, G en het Resterend Gedeelte, van de plaats voormeld, groot als zulke 265,5249 hektaar, op 6de Oktober 1921 getransporteerd krachtens Akten van Transport Nos, 10408/1921, 10407/1921, 10406/1921 en 10411/1921 aan voormelde recht van waterleiding.*
    a. *Het wordt echter verstaan dat daar altos ten minste zes duim water boven de middelste pijp van gezegde dam moet zijn.*
    b. *Gezegde dam moet door de eigenaren die gerechtigd zjin tot water daaruit behoorlik in order gehouden worden."*
3. *DE eigenaar van het eigendom onder deze Akte Gehouden is vrder gerechtigd tot zuiping voor zijn vee in gezegde dam met recht van toegang."*

4. *KRAGTENS Notariële Akte No. 140/53S geregisteer op 19 Februarie 1953, is die reg aan die ELEKTRISITEITSVOORSIENINGSKOMMISSIE verleen om elektrisiteit oor die eiendom Hiermee getransporteer te Vervoer, tesame met bykomende regte, en onderhewig aan kondisies, soos meer volledig sal blyk uit genoemde Notariële Akte*.

3.9. **Portion 51 of the Farm Vlakplaats 555** is subject to the following conditions:

A *Die voormalige restant van gedeelte 3 en gedeelte 13 ('n gedeelte van gedeelte 3) van die plaas Vlakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng aangetoon deur die figuur KnDmEK op die kaart LG 3490/2003, is onderhewig aan die volgende voorwaarde: Kragtens Notariele Akte K1141/1976S is die reg aan ESKOM verleen om elektrisiteit oor die hierinvermelde eiendom te Vervoer tesame met bykomende regte en onderworpe aan voorwaardes soos meer volledig sal blyk uit gesegde Notariele Akte. Die middellyne van die oorhoofse kraglyn word voorgestel deur die lyn q1p1n1 en j1k1l1m1 op kaart LG no 3490/2003. Die middellyn van die elektriese kraglyn word voorgestel deur die lyn m1n1 op kaart LG no 3490/2003.*

B. *Die voormalige van gedeelte 13 (‘n gedeelte van gedeelte 3) van die plaas Vlakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng, aangetoon deur figuur lmEKI op kaart LG no 3490/2003, is onderhewig aan die volgende voorwande Kragtens Notariele Akte no 216/1953S geregistreer op 12 maart 1953 is die reg aan ESKOM verleen om elekrisiteit oor die eiendom hieronder getransporteer te Vervoer, tesame met bykomende regte onderhewig aan voorwaardes, soos meer volledig sal blyk uit genoemde notariele Akte en kaart daaraan geheg. Die middellyne van die oorhoofse kraglyne word voorgestel deur die lyne r1e1 en s1d1 op kaart LG no 3490/2003.*

C. *Die voormalige restant van gedeelte 8 van die plaas Vlakplaats no 555, Registrasie Afdeling IQ., Provinsie Gauteng aangetoon deur figuur AjkgfXaedZA1B1C1D1E1A op kaart LG no 3490/2003, is onderhewig aan die volgende voorwaarde:*

1. *“Die eigenaar van het eigendom onder deze Akte gehouden is gerechtigde om water te leiden, voor besproeiings doeleings voor 29 urn uit lerede 7 dagen, uit zekere dam gelegen op Gedeelte E.F.H. en J van de plaats voormeld, op 6 Oktober 1921 getransporteerd krachtens Akte van Transport nrs 10410/1921 en wel langs de bestaande watervoor lopende over Gedeelte F en J voormeld.*

   ONDERWORPEN ten faveure van de eiegenaren van gedeelte J voormeld en gedeelte K,L en het Resterende Gedeelte groot als zulks 265,5249 hektaar van de plaats voormelde, op 6 Oktober 1921 getransporteerd krachtens Akte van Transport Nrs 10408/1021, 10407/1921, 10411/1921 aan voormeld recht van waterleiding .

   Het wordt echter verstaan dat daar altos ten minste zes duim water boven de middelste pijp van gezegde dam zijn.

   Gezedge dam moet door de eigenaren die gerechtigt zijn tot water daaruit behoorlik in orde gehouden worden .“

2. *Onderworpen aan die ewigdurende reg vir die gebruik van ‘n begraafplaas en ‘n reg van oorweg en toegang 6.30 meter wyd ten gunste van ELSIE JOSINA*

SUSANNA VENTER, gebore Cornelius op 17 Maart 1907 en CHRISTINA VAN SCHALKWYK COETZEE gebore op 21 Oktober 1897 soos meeer volledig blyk uit Notariele Akte Nr 663/1959-S gedateer 13 Februarie 1959 en geregistreer op 26 Junie 1959. Die lyne s ren rq stel die oostelike en noordelike grense van die Serwituut van reg van weg voor en die figuur wtuvw op kaart LG no 3490/2003 die serwituut van begraafplaas.

D. *Die voormalige gedeelte 12 van die plaas Vlakplaats no 555, Registrasie Afdeling IQ., Provinsie Gauteng, aangetoon deur figuur bdeab op kaart LG no 3490/2003 is onderhewig aan die volgende voorwaarde: De eigenaar van het eigendom onder deze Akte getransporteerde is gerechtigde om water te leiden, voor besproeiingdoeleindes voor 28 uren uit ierede 7 dagen, uit zekere dam gelegen op Gedeelte E.F.G. en J van de plaats voormeld getransporteerd krachtens Transport Akten Nrs 10408/1921. 10409/1921 en 10410/1021 en wel langs de bestaande watervoor lopende opver gedeelten F en J voormeld en gedeelten G en K van die plaas getransporteerd krachtens Transport Akten Nrs. 10406/1921 en 10408/1921.*

Onderworpen ten faveure van de eiegenaren van Gedeelte G voormeld en het Resterende Gedeelte, groot als zulks 265,5249 hektaar van de plaats voormeld, getransporteerd krachtens Transport Akte Nr 10411/1921 aan voormelde recht van waterleiding.

Het wordt echter verstaan dat daar altos ten minste zes duim water boven de middelste pijp van gezegde dam zijn.

Gezedge dam moet door de eigenaren die gerechtigt zijn tot water daaruit behoorlik in orde gehouden worden.

E. *Die voormalige gedeelte 19 (‘n gedeelte van gedeelte B) van die plaas Vlakplaats no 555, Registrasie Afdeling IQ., Provinsie Gauteng, aangetoon deur figuur jBhkj op kaart LG no 3490/2003 is onderhewig aan Notariële Akte Nr 140/1953S geregistreer op 19 Februarie 1953, is reg aan ELEKTRISITEITSVOORSIENINGSKOMMISSIE verleen om elektrisiteit oor die eiendom Hiermee getransporteer te Vervoer, tesame met bykomende regte en onderhewig aan kondisie, soos meer volledig blyk uit Notariële Akte. Die*

middellyne van die oorhoofse kraglyne word voorgestel deur die lyne h1g1f1 en za1b1 op kaart LG no 3490/2003.

F. Die voormalige gedeelte 11 van die plaas Vlaakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng aanagetoon deur die figuur YZdbY op kaart LG no 3490/2003 is onderhewig aan die volgende voorwaarde:

1. *Die eigenaar van het eigendom onder deze Akte gehouden is gerechtigde te leiden, voor besproeiings, voor 27 uren iedere 7 dagen, uit zekere dam gelegen op Gedeelten E.F.H. en J van de plaats voormeld getransporteerd krachtens Akten van Transport nrs 10408/1921, 10407/1921 en 19410/1921 en wel langs de bestaande watervoor lopende over gedeelten F en J voormeld en gedeelte G van de plaats voormeld geransporteerd krachtens Akte van Transport Nr 10406/1921.*

2. *Onderworpen ten faveure van de eiegenaren van Gedeelte G voormeld en gedeelte L en het Resterende Gedeelte van de plaats voormeld groot als zulks 265,5249 hektaar, getransporteerd krachtens Akten van Transport Nrs 10409/1921 en 10411/1921 van voormelde recht van waterleiding.*

   Het wordt echter verstaan dat daar altos ten minste zes duim water boven de middelste pijp van gezegde dam zijn.

   Gezedge dam moet door de eigenaren die gerechtigt zijn tot water daaruit behoorlik in orde gehouden worden

G. Die voormalige restant van die plaas Vlaakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng, aangedui deur die figuur XfghMNTUVWX op kaart LG no 3490/2003 is onderhewig aan die volgende voorwaarde:

1. *"Die eienaar van het eigendom onder deze Akte gehouden is gerechtigde te leiden, voor besproeiings doeleinden voor 31 uren uit iedere 7 dagen, uit zekere dam gelegen op gedeelten E.F.H. en J van die plaats voormeld getransporteerd krachtens Akten van Transport nrs 10408/1921, 10409/1921 en 19407/1921 en wel langs de bestaande watervoor lopende*

over gedeelten F en J voormeld en gedeelten G,K, en L van de plaats voormeld, heden geransporteerde krachtens Akten van Transport Nr 10406/1921, 10408/1921 en 10407/1921 en door de bestaande watervoor lopende over gedeelte J voormeld.

Het wordt echter verstaan dat daar altos ten minste zes duim water boven de middelste pijp van gezegde dam zijn.

Gezedge dam moet door de eigenaren die gerechtigt zijn tot water daaruit behoorlik in orde gehouden worden

2. *ONDERHEWIG aan die reg ten gunste van die Elektrisiteitsvoorsieningskommissie om elektrisiteit oor die bogenoemde eiendom te Vervoer tesame met bykomende regte en onderhewig aan kondisie soos vollediger blyk uit Notariele Akte Nr 443/1953-S geregistreer op 4 Junie 1953. Die midellyn vasn die elektriese kraglyne word voorgestel deur die lyne t1u1f1 en v1w1b1 op kaart LG no 3490/2003.*

H. *GEDEELTE 5 van gedeelte van die plass Vlakplaats no 555 (Nr 76) (waarvan die gedeeltes aangedui deur uit figure JFGHJ en SPQRS op kaart LG 3490/2003 gedeltes van uitmaaak) is onderwig aan die kondisie dat die Republiek van Suid-Afrika als eienaar van zeker Gedeelte van Gedeelte van gezedge plats groot 1,7131 hektare, gehouden onder Akte van Transport T7045/1908 gerechtigde zal zyn tot een recht vfan toegang tot het gedeelte van al den naaste publieke weg lopende over het eigendom en het recht zal hebben van toegang tot water op gezegde eigendom ('n gedeelte waarvan Hiermee getransporteer word) en het recht (zal hebben van toegang tot water op gesegdeigendom ['n gedeelte waarvan Hiermee getransporteer word]) om het te gebruiken waar doenlyk daarvoor door huishoudelike doeleinden door middle van pompen of andere werktuigen of door pypen, voren of andere wyze insluitende alle nodige bykomende rechten.*

I. Gedeelte27 ('n gedeelte van gedeelte 5 van 'n gedeelte van die plaas Vlakplaats 555 (No 76) soos gehou kragtens Transportakte T29608/1945 (waarvan die gedeeltee aangedui deur die figure JFGHJ en SPQRS op kaart LG no 3490/2003gedeeltes van uitmaak) is geregtig tot 'n serwituut van Reg van Weg 15,74 meter wyd soos aangedui op kaart A6608/47 OOR Resterende Gedeelte van gedeelte van die plaas Vlakplaats 555 (No 76), I.Q., Transvaal, groot 340,0432 hektare soos gehou kragtens Akte van Transport T3699/1926 welke reg van weg volledig beskrywe is in Notariele Akte 614/48-S.

3.10. **Portion 20 of the Farm Vlakplaats 555** is subject to the following conditions:

A. GEDEELTE 5 VAN Gedeelte van die plaas Vlakplaats no 555, Registrasie Afdeling IQ., voormeld (Gedeelte 20waarvan groot 6,8523 hektaar hieronder getransporteer word) is onderhewig aan die volgende voorwaarde:-

"Het eigendom mits deze getransporteerd is onderhewig aan de conditie date het Gouvernement van de unie Zuid-Afrika als eigenaar van zeker Gedeelte van Gedeelte van gezegde plaats, groot 1,7131 hektaar, getransporteerde kragtens Acte van Transport nr T7045/1908 gerechtigd zal zyn tot een recht van toegang tot het gezedg Gedeelte vanaf die naaste publiek weg loopende over eigendom hieronder getransporteerden het recht zal hebben van toegang tot water op gezedg eigendom en recht om het te gebruiken waar doenlik voor huishoudelike doeleinden door middel van pompen werktuigen of door pypen, voren of andere wyze alle nodige bykomende rechten.

3.11. **Remaining Extent of Portion 17 of the Farm Vlakplaats 555** is subject to the following conditions:

1. Het eigendom mits deze getransporteerd is onderhewig aan de conditie date het Gouvernement van de unie Zuid-Afrika als eigenaar van zeker Gedeelte van Gedeelte van gezegde plaats groot 2 morgen gehouden onder Acte van Transport No 7045/1908 gerechtigd zal zyn tot een recht van toegang tot het gezed gedeelte van af de naaste publike weg loopdende over het eigendom en het recht om het te gebruiken waar doenlyk voor huishoudelike doeleinden door middle van pompen of andere werktuigen of doop pypen voren of andere wyze insluitende alle odige bykomende rechten."

3.12. **Portion 52 of the Farm Vlakplaats 555** is subject to the following conditions:

A. *Onderhewig aan die kondsie dat die Government van die Repupliek van Suid Afrika als eigenaar van zeker Gedeeltevan Gedeelte van gesedge plaats groot 1,7131hektaar gehouden onder acte van Transport nr T7045/1908 zal zyn tot een recht van toegang tot het gezedgegedeelte van af den naaste publiek weg lopende over eigendom ('n gedeelte waarvan hieronder getransporteer word) en dat recht zal hebben van toegang tot water op gezedge eiendom ('n gedeelte waarvan hieronder getransporteer word en het recht om het te gebruiken waar doenlyn voor huishoudelike doeleinden door middel van pompen werktuigen of door pypen, voren of andere wyze all nodige bykomende rechten.*

B. *RESTERENDE GEDEELTE van Gedeelte 27 ('n gedeelte van gedeelte 170 van die plaas Vlaakplaats 555, Resterende Afdeling I.Q., soos aangedui kragtens Transportakte Nr T29608/1945 (waarvan die eiendom aangedui deur figuur GHdf op kaart LG no 3491/2003 deel vorm) is: GEREGTIG tot 'n serwituuit van reg van weg 15,74 meter wyd, soos aangdui op kaart No A6608/47 oor die Resterende gedeelte van die plaas Vlakplaats 555, Registrasie Afdeling I.Q., Province Gauteng, groot as sodanige 340,0432 (DRIE VIER NUL KOMMA NUL VIER DRIE TWEE) hektaar soos gehou kragtens Akte van Transport Nr 3699/1926, welke Reg van Weg volledig beskrywe is in Notariele Akte Nr 614/48-S.*

C. *Die voormalige resterende gedeelte van gedeelte 27 ('n gedeelte van gedeelte 17) en gedeelte 46 ('n gedeelte van gedeelte 27)van die plaas Vlaakplaats 555, Registrasie AfdelingI.Q., Provinsie Gauteng aangedui deur figuur ebaHdFe op kaart LG no 3491/2003 is onderwig aan 'n serwituut van Reg van Weg ten gunste van die algemene Publiek en welke Serwituut aangedui word deur die figuur ebjhge en bklnmdfb op kaart LG no 3491/2003, soos meer volledig sal blyk uit Notariele Akte van Reg van Weg Nr 864/48-S.*

D. *Die voormalige resterende gedeelte van gedeelte 1 van die plass Vlaakplaats no 555,Registrasie Afdeling I.Q.,Provinsie Gauteng (aangedui deur die figuur ABCDEdJKLMNPQRA op kaart LG no 3491/2003) is onderhewig aan Notariele Akte No 614/1948S waarkragtens die bovermelde eiendom, groot 340,0432*

hektaar, onderwig is aan 'n Serwituut van Reg van Weg 15,24 meters wyd ten gunste van Gedeelte 27 ('n gedeelte van Gedeelte 5 van Gedeelte) van die plaas VLAKPLAATS 555, distrik Vereeniging, groot 171,3081 hektaar gehou onder Aktevan Transport Nr 29068/2945 gedateer 22 November 1945. Die serwituut word voorgestel deur figuur pdJrqp op kaart LG3491/2003.

3.13. **Portion 5 of the Farm Vlakplaats 555** is subject to the following conditions:

1. *Kragtens Notariële Akte Nommer. 140/1953 S is die reg aan die Elektrisiteitsvoorsieningskommissie verleen om elektrisiteit oor die eiendom hieronder getransporteer te vervoer, tesame met bykomende regte, en onderhewig aan kondisies, soos meer volledig sal blyk uit genoemde Notariële Akte geregistreer op 19 Februarie 1953.*

3.14 **Remainder of the Farm Klipkop 530, IQ** is subject to the following conditions:

1. *Die voormalige Resterende Gedeelte van die genoemde plaas KLIPKOP Nr. 530, geleë in Vanderbijlpark distrik, groot as sulks 1878,3132 (EENDUISEND AGTHONDERD AGT EN SEWENTIG komma DRIE EEN DRIE TWEE) Hektaar (waarvan die eiendom hierbo getransporteer 'n gedeelte uitmaak), is onderhewig aan twee Regte van Weg ten gunste van die algemene Publiek soos meer ten volle sal blyk uit Notariële Akte Nr. 752/1945-S gedateer 27 Januarie 1945 en karate daaraan geheg.*
2. *Kragtens Notariële Akte van Sessie Nr. 755/945 dateer 16 Mei 1945, is alle handelsregte op die voormalige Restrende Gedeelte van die genoemde plaas KLIPKOP, groot as sulks 1856/1048 (eenduisend agthonderd sese n vuftig komma een nul vier agt) hektaar (waarvan die eiendom hieronder getransporteer 'n gedeelte uitmaak) gesedeer aan JOHANNES CHRISTIAAN VAN DER WALT as eienaar van Gedeelte 26, groot 21,4133 hektaar van genoemde plaas gehou onder Akte van Transport T29288/1945, gedateer 20 November 1945, volgens die bepalings bervat in gemelde Akte van Sessie.*
3. *Kragtens Artikel 11(1)B van Wet 37/1955 is 'n gedeelte groot ongeveer 5,1463 VYF komma EEN VIER SES DRIE hektaar, van die eiendom Hiermee getransporteer, onteien deur die Republiek van Suid-Afrika (in sy adminitrasie van Suid-Afrika Vervoerdienste).*
4. *Onderhewig aan 'n voorbehoud van alle regte op Minerale ten gunste van Jan Hermanus Cronje Muller, Identiteitsnommer 500819 5016 08 2, getroud buite*

gemeenskap van goed, soos meer volledig sal blyk uit Sertifikaat van Mineraleregte K 6591/1993 RM.

3.15 **Remainder of Portion 47 of the Farm Klipkop 530** is subject to the following conditions**:**

1. *ONDERHEWIG aan 'n serwituut teng gunste van die ESKOM on elektrisiteit oor die eiendom te Vervoer, tesame met bykomende regte en onderhewig aan die voorwaardes soos meer volledig sal blyk uit Notariële Akte van Serwituut 268/1954S die middellyne van welke elektiese kraglyn en ondegrondse kabels voorgesel word deur die lyne dh en ej op die gemelde Kaart L.G. No. 6879/2002.*
2. *ONDERHEWIG aan 'n serwituut teng gunste van die ESKOM on elektrisiteit oor die eiendom te Vervoer, tesame met bykomende regte en onderhewig aan die voorwaardes soos meer volledig sal blyk uit Notariële Akte van Serwituut 396/1971S die middellyne van welke elektiese kraglyn en ondegrondse kabels voorgesel word deur die lyne dh en ej op die gemelde Kaart L.G. No. 6879/2002.*
3. *ONDERHEWIG aan die bepalings van Artikel 11(1) (B) van Wet 37 van 1955 waarvolgens 'n gedeelte van bogemelde eiendom onteien is deur die Suid-Afrikaanse Spoorweë en Hawens Administrasie soos meer ten volle sal blyk uit Onteieningskennisgewing T217/1963 geliasseer by Akte van Transport 5098/1917.*

4. **DISPOSAL OF EXISTING CONDITIONS OF TITLE**

The aforesaid title conditions shall be dealt with under the following headings in the Conditions of Establishment: -

4.1. **Portion 2 of the Farm Tweefontein 523**:

4.1.1. Title Condition 1: Excluding the following servitudes which will be brought forward to the erven in the township.

4.1.2. Title Condition 2: The following entitlements will be brought forward to the erven in the township.

4.2. **Farm Klipfontein 674**:

4.2.1. Title Condition: The following servitude and entitlements will be brought forward to the erven in the township.

4.3. **Remainder of Portion 9 (a Portion of Portion 3) of the Farm Rietkuil 554**:

4.3.1. Title Condition 1: Removal of title deed condition as a pre-proclamation condition as conditions in favour of the National Government e.g. "Die regte van die Staatspresident soos in artikel 34 van die Kroongrond Nedersettings Wet 1912 bepaal" must be cancelled by application by the Department of Public Works in terms of section 2 (2C) of the State Land Disposal Act 48 of 1961.

4.3.2. Title Condition 2: Excluding the following servitudes which will be brought forward to the erven in the township.

4.4. **Portion 26 of the Farm Rietkuil 554**:

4.4.1. Title Condition 1: Removal of title deed condition as a pre-proclamation condition as conditions in favour of the National Government e.g. "Die regte van die Staatspresident soos in artikel 34 van die Kroongrond Nedersettings Wet 1912 bepaal" must be cancelled by application by the Department of Public Works in terms of section 2 (2C) of the State Land Disposal Act 48 of 1961.

4.4.2. Title Condition 2: Excluding the following servitudes which will be brought forward to the erven in the township.

4.5. **Remaining Extent Portion 3 of the Farm Rietkuil 554**:

4.5.1. Title Condition 1: Removal of title deed condition as a pre-proclamation condition as conditions in favour of the National Government e.g. "Die regte van die Staatspresident soos in artikel 34 van die Kroongrond Nedersettings Wet 1912 bepaal" must be cancelled by application by the Department of Public Works in terms of section 2 (2C) of the State Land Disposal Act 48 of 1961.

4.5.2. Title Condition 2: Excluding the following servitudes which will be brought forward to the erven in the township.

4.6. **Remainder of Portion 6 of the Farm Vlakplaats 555**:

4.6.1. Title Condition 1: Excluding the following entitlement which will be brought forward to the erven in the township.

4.7. **Portion 18 (a portion of portion 6) of the Farm Vlakplaats 555**:

4.7.1. Title Condition 1: Excluding the following entitlement which will be brought forward to the erven in the township.

4.7.2. Title Condition 2: Excluding the following servitudes which will be brought forward to the erven in the township.

4.7.3. Title Condition 3: Excluding the following servitudes which will be brought forward to the erven in the township.).

4.8. **Portion 7 of the Farm Vlakplaats 555**:

4.8.1. Title Condition 1: Excluding the following entitlements which will be brought forward to the erven in the township.

4.8.2. Title Conditions 2 - 4: Excluding the following servitudes and entitlements which will be brought forward to the erven in the township.

4.9. **Portion 51 of the Farm Vlakplaats 555**:

4.9.1. Title Condition A: Excluding the following servitudes which will be brought forward to the erven in the township.

4.9.2. Title Condition B: Excluding the following servitudes which will be brought forward to the erven in the township.

4.9.3. Title Condition C: Excluding the following servitudes and entitlements which will be brought forward to the erven in the township.

4.9.4. Title Condition D: Excluding the following servitudes and entitlements which will be brought forward to the erven in the township.

4.9.5. Title Condition E: Excluding the following servitudes which will be brought forward to the erven in the township.

4.9.6. Title Condition F: Excluding the following servitudes and entitlements which will be brought forward to the erven in the township.

4.9.7. Title Condition G1: Excluding the following entitlements which will be brought forward to the erven in the township.

4.9.8. Title Condition G2: Excluding the following servitudes which will be brought forward to the erven in the township.

4.9.9. Title Condition H: Excluding the following servitudes and entitlements which will be brought forward to the erven in the township.

4.9.10. Title Condition I: Excluding the following entitlements which will be brought forward to the erven in the township.

4.10. **Portion 20 of the Farm Vlakplaats 555**:

4.10.1. Title Condition: Excluding the following servitudes and entitlements which will be brought forward to the erven in the township.

4.11. **Remaining Extent of Portion 17 of the Farm Vlakplaats**:

4.11.1. Title Condition 1: Excluding the following servitudes and entitlements which will be brought forward to the erven in the township.

4.12. **Portion 52 of the Farm Vlakplaats 555**:

4.12.1. Title Condition A: Excluding the following servitudes and entitlements which will be brought forward to the erven in the township.

4.12.2. Title Condition B: Excluding the following servitudes which will be brought forward to the erven in the township.

4.12.3. Title Condition C will be brought forward to all the erven in the Township;

4.12.4. Title Condition D: Excluding the following servitudes which will be brought forward to the erven in the township.

4.13. **Portion 5 of the Farm Vlakplaats 555** is subject to the following conditions:

4.13.1. Title Condition: Excluding the following servitudes which will be brought forward to the erven in the township.

4.14 **Remainder of the Farm Klipkop 530, IQ**:

1.1.1. Title Conditions 1, 2 and 3 will be brought forward to all the erven in the township;

1.1.2. Title Condition 4 will be omitted.

4.15 **Remainder of Portion 47 of the Farm Klipkop 530**:

1.1.3. Title Condition 1: Excluding the following servitudes which only affect erven ## and ## in the township (This servitude only affects certain erven in the township);

1.1.4. Title Condition 2: Excluding the following servitudes which only affect erven ## and ## in the township (This servitude only affects certain erven in the township);

1.1.5. Title Condition 3 will be brought forward to all the erven in the Township

5. **<u>PARTICULARS OF REGISTERED OWNERS, MORTGAGE BONDS AND INTERDICTS REGISTERED OVER THE PROPERTIES:</u>**

5.1 Properties 1 – 13 are currently registered in the name of:

POCONAMIX PROPRIETARY LIMITED
REGISTRATION NUMBER 2017/498408/07

The above properties are not bonded.

5.2 Properties 14 and 15 are currently registered in the name of the Government of South Africa

These properties are not bonded.

6. **MINERAL RIGHTS:**

All mineral rights have been deregistered and are therefore no longer applicable.

7. **CONVEYANCING STEPS TO BE FOLLOWED:**

7.1 The removal of the respective title deed conditions;

7.2 The possible subdivision and consolidation of the above properties on which the township (s) can be situated;

7.3 Registration of a 4(1)(b) application in respect of title deed conditions;

7.4 The acquisition of development rights in respect of properties 14 and 15 to enable same to be included in the township register;

7.5 Opening of the Township Register;

CONVEYANCER

FRANCIS BOLLEURS

Victor & Partners Inc.
ATTORNEYS | NOTARIES | CONVEYANCERS

Always confirm the contents of any communication from our firm (as with any other company) if our banking details are purported to have changed. Use a known contact number (not the one quoted on the letter or email) to contact us and speak to a person that you normally deal with and whose voice you recognize

ANNEXURE D

ENGELBRECHT ATTORNEYS Prokureur/Attorney
TEL: 011 869 2201

DEED OF TRANSFER

in favour of

THE NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

over

R/E OF THE FARM KLIPKO 530 REGISTRATION DIVISION I.Q., THE PROVINCE OF GAUTENG

ENGELBRECHT ATTORNEYS
37 SANGIRO CLOSE
CNR OF MICHELLE AVENUE & SANGIRO CLOSE
RANDHART
Tel: 011 869 2201

GhostConvey 8.4.3.9

For Information Only

ENGELBRECHT ATTORNEYS
37 Sangiro Close
Cnr of Michelle Avenue & Sangiro Close
Randhart

Prepared by me

CONVEYANCER
~~ENGELBRECHT AW~~

ANTIONETTE ROELOFSE

SEELREG
STAMP DUTY .....
FOOL
FEES R1000.00

T 046824 07

DEED OF TRANSFER

BE IT HEREBY MADE KNOWN THAT

~~**ADRIAAN WILLEM ENGELBRECHT**~~ **ANTIONETTE ROELOFSE**

appeared before me, REGISTRAR OF DEEDS at PRETORIA, he the said Appearer being duly authorised thereto by a Power of Attorney signed at JOHANNESBURG on 08 DECEMBER 2006 and granted to him by

MARNO JAN HERMANUS MULLER
Identity Number 790821 5029 08 0
Unmarried

For Information Only

And the Appearer declared that his said principal had truly and legally sold on 5 December 2006 and that he, the said Appearer, in his capacity aforesaid, did, by these presents, cede and transfer to and on behalf of

THE NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

its Successors in Title or assigns, in full and free property

1. REMAINING EXTENT OF THE FARM KLIPKOP 530
   REGISTRATION DIVISION I.Q., THE PROVINCE OF GAUTENG;

   MEASURING 1031,8770 (ONE THOUSAND AND THIRTY ONE COMMA EIGHT SEVEN SEVEN ZERO) HECTARES

   FIRST TRANSFERRED BY GOVERNMENT TRANSFER WITH DIAGRAM RELATING THERETO DATED 9 MARCH 1860 AND HELD BY DEED OF TRANSFER NO. T120595/2001

SUBJECT TO THE FOLLOWING CONDITIONS:-

1. Die voormalige Resterende Gedeelte van die genoemde plaas KLIPKOP Nr. 530, geleë in Vanderbijlpark distrik, groot as sulks 1878,3132 (EENDUISEND AGTHONDERD AGT EN SEWENTIG komma DRIE EEN DRIE TWEE) Hektaar (waarvan die eiendom hierbo getransporteer 'n gedeelte uitmaak), is onderhewig aan twee Regte van Weg ten gunste van die algemene Publiek soos meer ten volle sal blyk uit Notariële Akte Nr. 752/1945-S gedateer 27 Januarie 1945 en kaarte daaraan geheg.

2. Kragtens Notariële Akte van Sessie Nr. 755/945 dateer 16 Mei 1945, is alle handelsregte op die voormalige Resterende Gedeelte van die genoemde plaas KLIPKOP, groot as sulks 1856,1048 (eenduisend agthonderd ses en vyftig komma een nul vier agt) hektaar (waarvan die eiendom hieronder getransporteer 'n gedeelte uitmaak) gesedeer aan JOHANNES CHRISTIAAN VAN DER WALT as eienaar van Gedeelte 26, groot 21,4133 hektaar van genoemde plaas gehou onder Akte van Transport T29288/1945, gedateer 20 November 1945, volgens die bepalings bervat in gemelde Akte van Sessie.

3. Kragtens Artikel 11(1)B van Wet 37/1955 is 'n gedeelte groot ongeveer 5,1463 VYF komma EEN VIER SES DRIE hektaar, van die eiendom hiermee getransporteer, onteien deur die Republiek van Suid-Afrika (in sy administrasie van Suid-Afrika Vervoerdienste).

4. Onderhewig aan 'n voorbehoud van alle regte op Minerale ten gunste van Jan Hermanus Cronje Muller, Identiteitsnommer 500819 5016 08 2,

getroud buite gemeenskap van goed, soos meer volledig sal blyk uit Sertifikaat van Mineraleregte K 6591/1993 RM.

SUBJECT to such conditions as are mentioned or referred to in the aforesaid Deed/s.

2. PORTION 14 OF THE FARM KLIPKOP 530
REGISTRATION DIVISION I.Q., THE PROVINCE OF GAUTENG;

MEASURING 21,4133 (TWENTY ONE COMMA FOUR ONE THREE THREE) HECTARES

FIRST REGISTERED BY CERTIFICATE OF REGISTERED TITLE T7277/1955 WITH DIAGRAM S.G. NR A2116/44 ANNEXED THERETO AND HELD BY DEED OF TRANSFER T55011/2001

SUBJECT to the following conditions:

Kragtens Notariële Akte van Sessie Nr. 755/1945 dateer 16 Mei 1945, is alle handelsregte op die voormalige Resterende Gedeelte van die genoemde plaas KLIPKOP Nr 16, distrik Vereeniging, groot as sulks 1856,8999, hektaar (waarvan die eiendom hieronder gehou 'n gedeelte uitmaak) gesedeer aan JOHANNES CHRISTIAAN VAN DER WALT as eienaar van Gedeelte 26, groot 21,4133 hektaar van genoemde plaas gehou onder Akte van Transport T29288/1945, gedateer 20 November 1945, volgens die bepalings bevat in gemelde Akte van Sessie.

SUBJECT to such conditions as are mentioned or referred to in the aforesaid Deed/s.

For information Only

WHEREFORE the Appearer, renouncing all right and title which the said

MARNO JAN HERMANUS MULLER, Unmarried

heretofore had to the premises, did in consequence also acknowledge him to be entirely dispossessed of, and disentitled to the same, and that by virtue of these presents, the said

THE NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

its Successors in Title or Assigns, now is and henceforth shall be entitled thereto, conformably to local custom, the State, however reserving its rights, and finally acknowledging the purchase price to be the sum of R5 186 000,00 (FIVE MILLION ONE HUNDRED AND EIGHTY SIX THOUSAND RAND).

IN WITNESS WHEREOF, I the said Registrar, together with the Appearer q.q., have subscribed to these presents and have caused the Seal of Office to be affixed thereto.

THUS DONE AND EXECUTED at the Office of the Registrar of Deeds at Pretoria on

q.q.

In my presence

REGISTRAR OF DEEDS

For Information Only

ENGELBRECHT ATTORNEYS

(011) 869-2201

SEELREG
STAMP DUTY R
FEE R1000-00

Prepared by me

CONVEYANCER
ENGELBRECHT AW

T 005973 07

DEED OF TRANSFER

BE IT HEREBY MADE KNOWN THAT

~~**ADRIAAN WILLEM ENGELBRECHT**~~ **ANTIONETTE ROELOFSE**

appeared before me, REGISTRAR OF DEEDS at PRETORIA, he the said Appearer being duly authorised thereto by a Power of Attorney signed at JOHANNESBURG on 8 DECEMBER 2006 and granted to him by

ALLERODE PROPERTIES (PROPRIETARY) LIMITED
No. 1965/003756/07

FOR INFORMATION

And the Appearer declared that his said principal had truly and legally sold on 5 December 2006 and that he, the said Appearer, in his capacity aforesaid, did, by these presents, cede and transfer to and on behalf of

THE NATIONAL GOVERNMENT OF
THE REPUBLIC OF SOUTH AFRICA

its Successors in Title or assigns, in full and free property

1. THE FARM ZEEKOEFONTEIN 673
   REGISTRATION DIVISION I.Q., THE PROVINCE OF GAUTENG;

   MEASURING 745,9678 (SEVEN HUNDRED AND FORTY FIVE COMMA NINE SIX SEVEN EIGHT) HECTARES

   FIRST REGISTERED AND STILL HELD BY CERTIFICATE OF CONSOLIDATE TITLE T79522/2004 WITH CONSOLIDATED DIAGRAM L.G. No. 6681/2002 ANNEXED THERETO

   SUBJECT TO THE FOLLOWING CONDITIONS;

For Information

A. Die voormalige Gedeelte 6 ('n gedeelte van Gedeelte 2) van die plaas Holfontein 556 Registrasie Afdeling I.Q. Gauteng, aangedui deur die figuur A B C S T U A op die gemelde Kaart L.G. No. 6881/2002, is onderhewig aan die volgende voorwaardes:

1. KRAGTENS Notariële Akte 367/1939S is die reg aan Eskom verleen om elektrisiteit oor die eiendom te vervoer, tesame met bykomende regte, en onderhewig aan kondisies, die midellyn van welke serwituut aangedui word deur die lyn q w r op die gemelde Kaart L.G. No. 6881/2002, soos meer volledig sal blyk uit gesegde Akte en Kaart.

2. KRAGTENS Notariële Akte 289/1960S is die reg aan Eskom verleen om elektrisiteit oor die eiendom te vervoer, tesame met bykomende regte, en onderhewig aan kondisies, die middellyn van welke serwituut aangedui word deur die lyn s u op die gemelde Kaart L.G. No. 6881/2002, soos meer volledig sal blyk uit gesegde Akte en Kaart.

3. KRAGTENS Notariële Akte 832/1971S is die erf aan die Elektrisiteitsvoorsieningskommissie verleen om Eskom elektrisiteit oor die hierinvermelde eiendom te vervoer, tesame met bykomende regte, en onderhewig aan kondisies, die middllyn van welke serwituut aangedui word deur die lyn t v op die gemelde Kaart L.G. No. 6881/2002, soos meer volledig sal blyk uit gesegde Akte en Kaart.

B. Die voormalige Gedeelte 4 ('n Gedeelte van Gedeelte A) van die plaas Zeekoefontein 573 Registrasie Afdeling I.Q. Gauteng waarvan daardie gedeeltes van die eiendom hieronder gehou aangedui deur die figure R V W X Y M N P Q R en B_1 C J K L M Z A_1 B_1 en op die gemelde Kaart L.G. No. 6881/2002 'n deel uitmaak, is onderhewig aan die volgende voorwaardes:

(a) "Dat de gehele stroom van de bevonste fontein uitkomende op gedeelte 3 van Gedeelte "A" by baken aangetoond op Kaart S.G. Nr. A1541/1927 gehecht aan Acte van Transport 13883/1927 door letter M en gemerkt M op de kaart van Gedeelte "B" zal moeten

lopen ten gebruike van de eigenaren van Gedeelte "B" van meergemelde plaatz en wel vanaf Zaterdag morgen om vyf uur in iedere week tot de daaropvolgende Zondag avond by zonsondergang voor de overige dagen in iedere week zal de volle stroom voor het uisluitend gebruik zyn van de eigenaren of bezitters van het restant van gemelde Gedeelte "A" van meergemelde plaatz groot 1251,4161 hektaar (waarvan die eiendom hiermee getransporteer 'n gedeelte uitmaak).

(b) Dat het schoonmaken en de in orde houding van genoemde fontein en de watervoor tweemaal des jaars zal moeten geschieden beginnende op den eersten April eersten September van ieder jaar. Dat de eigenaren of bezitters van restant van Gedeelte "A" van gemelde plaatz groot 1251,4161 Hektaar (waarvan die eiendom hiermee getransporteer 'n gedeelte uitmaak) twee-derden en de eigenaren of beziters van Gedeelte "B" van gemelde plaatz een-derde der kosten zullen dragen. Dat geene graving of delving of delving plaats mag vinden noch het maken van gaten en sloten binnen eene distantie van een honderd treden Zuid van voornoemde fontein zullen vry lopen voor gebruik van de eigenaren of bezitters van Gedeelte "B" van genoemde plaatz. In het genot van de rechten tot water Aldus aan het restant van Gedeelte "A" voormeld toekomende zullen het gesegde Gedeelte 4 (waarvan die eiendom hiermee getransporteer 'n gedeelte uitmaak) en Gedeelte 3 en 5 van Gedeelte "A" voormelde groot 265,5249 hektaar en 290,3672 hektaar respectivelik getransporteerd onder Acten van Transport 13883/1927 en 14885/1927 gerechtigd zyn toot een-derde elk van gezegde water.

(c) Het voormalige Resterend Gedeelte van Gedeelte "A" voormeld, groot 1251,4161 hektaar (waarvan die eiendom hiermee getransporteer 'n gedeelte uitmaak) is onderworpen aan het recht ten faveure van de eigenaar van Gedeelte 2 van Gedeelte "A" groot 1,7131 hektaar getransporteer krachtens Acte van Transport 1940/1916 tot het recht van weg op en over het gezegd resterend gedeelte tot en vanaf zyn gedeelte vanaf en tot het gerieflikst toegangelik publieke pad."

C Die voormalige Resterende Gedeelte van Gedeelte 25 ('n gedeelte van Gedeelte 1) van die plaas Zeekoefontein 573 Registesie Afdeling I.Q., Gauteng, aangedui deur die figuur B' C J K L M Z A' B' op gemelde kaart L.G. No. 6881/2002, is onderhewig aan die regte gaan die Staat soos in Artikel 34 van die Kroongrond Nederzettings, Wet. 1912 bepaal.

D. Die voormalige Gedeeltes 134, 135, 136, 137, 138, 139 en 141 (almal gedeelte van gedeelte 10) van die plaas Vaalfontein 579 Registrasie Afdewling I.Q., Gauteng, gesamentlik aangedui deur die figuur C D E F G H C op die gemelde Kaart L.G. No. 6881/2002, is onderhewig aan die volgende voorwaardes opgelê deur die Beherende Gesag kragtens Artikel 11(6) van Wet 21 van 1940, naamlik:

(a) "Behalwe met die skriftelike toestemming van die Beherende Gesag:

(i) Mag die grond slegs vir woon- en landboudoeleindes gebruik word. Op grond, of op enige behoorlik goedgekeurde onderverdeling daarvan, mag daar nie 'n groter getal geboue wees as een woonhuis tesame met die buitegeboue wat gewoonlik vir die gebruik in verband daarmee nodig is en verdere geboue en bouwerke wat vir landboudoeleindes nodig mag wees nie.

(ii) Geen winkel of besigheid of nywerheid van watter aard ookal mag op die grond geopen of gedryf word nie.

(b) Gebeur dit dat die grond as 'n nedersetting op dorp aangelê of in 'n bestaande dorp ingelyf of met ander grond gekonsolideer word, dan verval die voorwaardes in klousules (i) en (ii) van paragraaf (a) na skriftelike toestemming daarop van die Beherende Gesag.

E. Die eindom hieronder gehou is onderhewig aan 'n serwituut van reg van weg, 15,74 meter breed, ten gunste van die algemene publiek aangedui deur die figuur a b f F a op die gemelde kaart L.G. No. 6881/2002, soos meer ten volle sal blyk uit Notariële Akte van Serwituut 1293/1958S.

SUBJECT to such conditions as are mentioned or referred to in the aforesaid Deed/s.

2. THE FARM HOLFONTEIN 672
REGISTRATION DIVISION I.Q., THE PROVINCE OF GAUTENG;

MEASURING 405,4307 (FOUR HUNDRED AND FIVE COMMA FOUR THREE ZERO SEVEN) HECTARES

FIRST REGISTERED AND STILL HELD BY CERTIFICATE OF CONSOLIDATE TITLE T79520/2004 WITH CONSOLIDATED DIAGRAM L.G. No. 6682/2002 ANNEXED THERETO

SUBJECT to such conditions as are mentioned or referred to in the aforesaid Deed/s.

3. PORTION 47 OF THE FARM KLIPKOP 530
REGISTRATION DIVISION I.Q., THE PROVINCE OF GAUTENG;

MEASURING 1365,8921 (ONE THOUSAND THREE HUNDRED AND SIXTY FIVE COMMA EIGHT NINE TWO ONE) HECTARES

FIRST REGISTERED AND STILL HELD BY CERTIFICATE OF CONSOLIDATE TITLE T79521/2004 WITH CONSOLIDATED DIAGRAM L.G. No. 6879/2002 ANNEXED THERETO

SUBJECT TO THE FOLLOWING CONDITIONS;

FOR INFORMATION

A. ONDERHEWIG aan 'n serwituut ten gunste van die ESKOM om elektrisiteit oor die die eiendom te vervoer, tesame met bykomende regte en onderhewig aan die voorwaardes soos meer volledig sal blYk uit Notariële Akte van Serwituut 268/1954S die middellyne van welke elektriese kraglyn en ondegrondse kabels voorgesel word deur die lyne dh en ej op die gemelde Kaart L.G. No. 687/2002.

B. ONDERHEWIG aan 'n serwituut ten gunste van die ESKOM om eletrisiteit oor die eiendom te vervoer, tesame met bykomende regte en onderhewig aan die voorwaardes soos meer volledig sal blyk uit Notariële Akte van Serwituut 396/1971S die middellyne van welke elektriese kraglyn en ondergrondse kabels voorgestel word deur die lyn fkg op die gemelde Kaart L.G. No 6879/2002.

C. ONDERHEWIG aan die bepalings van Artikel 11(1) (B) van Wet 37 van 1955 waarvolgens 'n gedeelte van bogemelde eiendom onteien is deur die Suid-Afrikaanse Spoorweë en Hawens Administraise soos meer ten volle sal blyk uit Onteieningskennisgewing T217/1963 geliasseer by Akte van Transport 5098/1917.

SUBJECT to such conditions as are mentioned or referred to in the aforesaid Deed/s.

For Information

WHEREFORE the Appearer, renouncing all right and title which the said

ALLERODE PROPERTIES (PROPRIETARY) LIMITED
No. 1965/003756/07

heretofore had to the premises, did in consequence also acknowledge it to be entirely dispossessed of, and disentitled to the same, and that by virtue of these presents, the said

THE NATIONAL GOVERNMENT OF
THE REPUBLIC OF SOUTH AFRICA

its Successors in Title or Assigns, now is and henceforth shall be entitled thereto, conformably to local custom, the State, however reserving its rights, and finally acknowledging the purchase price to be the sum of R13 160 000,00 (THIRTEEN MILLION ONE HUNDRED AND SIXTY THOUSAND RAND).

IN WITNESS WHEREOF, I the said Registrar, together with the Appearer q.q., have subscribed to these presents and have caused the Seal of Office to be affixed thereto.

THUS DONE AND EXECUTED at the Office of the Registrar of Deeds at Pretoria on

2007 -01- 15

q.q.

In my presence

REGISTRAR OF DEEDS

For Information

1387

Liebenberg Malan Mofolo Inc
20 Ueckermann Street
Heidelberg
Tel: (016) 341 4164

DEED OF TRANSFER

in favour of

POCONAMIX PROPRIETARY LIMITED

over

PORTION 18 (A PORTION OF PORTION 6) OF THE FARM VLAKPLAATS 555 and PORTION 7 OF THE FARM VLAKPLAATS 555 and REMAINING EXTENT OF PORTION 6 OF THE FARM VLAKPLAATS 555

SEELREG
STAMP DUTY R.....
FOOI
FEES R 6 477-00

1387

Liebenberg Malan Mofolo Inc
20 Ueckermann Street
Heidelberg
Tel: (016) 341 4164

Prepared by me

CONVEYANCER
SHARON ENGELBRECHT
(M45829)

DEED OF TRANSFER

BE IT HEREBY MADE KNOWN THAT

T 000068016 / 2023

RONELL ERASMUS (M23159)

appeared before me, the Registrar of Deeds at Pretoria, the said appearer, being duly authorised thereto by a power of attorney granted to her by

1. **MARTWALT BOERDERY PROPRIETARY LIMITED**
   Registration Number 2014/260371/07

   (As owner of the bare dominium)

2. **JOZUA FRANCOIS MARTINS**
   Identity Number 590127 5083 08 1
   Unmarried

   (As Usus Holder)

signed at HEIDELBERG on 31 JULY 2023

And the appearer declared that:

Whereas the Transferors had truly and legally sold the undermentioned properties on 14 April 2021 by Private Treaty

Now therefore the Appearer on behalf of the Transferors, did by these presents, cede and transfer to and on behalf of

POCONAMIX PROPRIETARY LIMITED
Registration Number 2017/498408/07

its successors in title or assigns, in full and free property

1. **PORTION 18 (A PORTION OF PORTION 6) OF THE FARM VLAKPLAATS 555, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

   MEASURING 79,6403 (SEVENTY NINE COMMA SIX FOUR ZERO THREE) HECTARES

   FIRST TRANSFERRED BY DEED OF TRANSFER T3877/1927 WITH DIAGRAM ATTACHED THERETO AND HELD BY DEED OF TRANSFER T85435/2015 AND HELD BY NOTARIAL CESSION OF "USUS" K5455/2015S

SUBJECT to the following conditions:

1. DE eigenaar van gedeelte E (1/ aandeel in gedeelte 1 waarvan hieronder gehou wordt) is gerechtigd tot zuiping voor zign vee in de dam gelegen op gezegde gedeelte E en gedeelten F.H. en J van de plaats voormeld, getransporteerd krachtens Akten van Transport Nos. 10408/1921, 10409/1921, 10407/1921 en 10410/1921 met recht van toegang.

2. KRAGTENS Notariële Akte No. 140/53S geregistreer op 19 Februarie 1953, is die reg aan die ELEKTRISITEITSVOORSIENINGSKOMMISSIE verleen om elektrisiteit oor die eiendom hiermee getransporteer te vervoer, tesame met bykomende regte, en onderhewig aan kondisies, soos meer volledig sal blyk uit genoemde Notariële Akte.

3. KRAGTENS Notariële Akte No. K.3160/74 geregistreer op 11 Desember 1973, is die reg aan die ELEKTRISITEITSVOORSIENINGSKOMMISSIE verleen om elektrisiteit oor die eiendom Hiermee getransporteer te Vervoer, tesame met bykomende regte, en onderhewig an kondisies, soos meer volledig sal blyk uit genoemde Notariële Akte.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

2. **PORTION 7 OF THE FARM VLAKPLAATS 555, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

   MEASURING 255,2465 (TWO HUNDRED AND FIFTY FIVE COMMA TWO FOUR SIX FIVE) HECTARES

   FIRST TRANSFERRED BY DEED OF TRANSFER T.10409/1921 WITH DIAGRAM ATTACHED THERETO AND HELD BY DEED OF TRANSFER T85435/2015 AND HELD BY NOTARIAL CESSION OF "USUS" K5455/2015S

SUBJECT to the following conditions:

a) "DE eigenaar van het eigendom onder deze Akte gehouden is gerechtigd om water te leiden, voor besproeiings doeleindes voor 26 uren uit iedere 7 dagen, uit zekere dam gelegen op het eigendom onder deze Akte gehouden en gedeelten E, H en J van de plaats voormeld, op 6 Oktober 1921 getransporteerd krachtens Akten van Transport Nos. 10408/1921, 10407/1921 en 10410.

b) ONDERWORPEN ten faveure van de eiegenaren van gedeelte J voormeld en gedeelten K,L, G en het Resterend Gedeelte van de plaats voormeld, groot als zulke 265,5249 hektaar, op 6de Oktober 1921 getransporteerd krachtens Akten van Transport Nos, 10408/1921, 10407/1921, 10406/1921 en 10411/1921 aan voormelde recht van waterleiding.

Het wordt echter verstaan dat daar altoos ten minste zes duim water boven de middelste pijp van gezegde dam moet zijn.

Gezegde dam moet door de eigenaren die gerechtigd zijn tot water daaruit behoorlik in orde gehouden worden."

c) DE eigenaar van het eigendom onder deze Akte gehouden is verder gerechtigd tot zuiping voor zijn vee in gezegde dam met recht van toegang."

d) KRAGTENS Notariële Akte No. 140/53S geregistreer op 19 Februarie 1953, is die reg aan die ELEKTRISITEITSVOORSIENINGSKOMMISSIE verleen om elektrisiteit oor die eiendom Hiermee getransporteer te Vervoer, tesame met bykomende regte, en onderhewig aan kondisies, voor meer volledig sal blyk uit genoemde Notariële Akte.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

3. **REMAINING EXTENT OF PORTION 6 OF THE FARM VLAKPLAATS 555, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

MEASURING 171,3192 (ONE HUNDRED AND SEVENTY ONE COMMA THREE ONE NINE TWO) HECTARES

FIRST TRANSFERRED BY DEED OF TRANSFER T10408/1921 WITH DIAGRAM ATTACHED THERETO AND HELD BY DEED OF TRANSFER T85435/2015 AND HELD BY NOTARIAL CESSION OF "USUS" K5455/2015S

SUBJECT to the following conditions:

A. "DE eigenaar van gedeelte "E" (1/2 aandeel in het resterende gedeelte waarvan hieronder gheouden wordt) is gerechtigd tot zuiping voor zign vee in de dam gelegen op gezegde gedeelte "E" en gedeelte F.H. en J van de plaats voormeld getransporteerd krachtens Akten van Transport Nos. 10409/1921, 10407/1921 en 1041/1921 met recht van toegang.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

WHEREFORE the appearer, renouncing all the rights and title the said

1. **MARTWALT BOERDERY PROPRIETARY LIMITED (as bare dominium owner)**
2. **JOZUA FRANCOIS MARTINS, Unmarried (as Usus Holder)**

heretofore had to the premises, did, in consequence also acknowledge them to be entirely dispossessed of, and disentitled to, the same; and that, by virtue of these presents, the said

POCONAMIX PROPRIETARY LIMITED

its successors in title or assigns, now is and henceforth shall be entitled thereto, conformably to local customs; the State, however, reserving its rights, and finally acknowledging that the purchase price is the amount of R22 463 207,60 (Twenty Two Million Four Hundred and Sixty Three Thousand Two Hundred and Seven Rand and Sixty Cents) VAT inclusive.

IN WITNESS WHEREOF I, the said Registrar, together with the appearer, have subscribed to these presents, and have caused the seal of office to be affixed thereto.

THUS DONE AND EXECUTED at the Office of the Registrar of Deeds at Pretoria on

2023 -11- 0 3

Signature of appearer *q.q.*

In my presence

Registrar of Deeds

SEELREG
STAMP DUTY R.....
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FEES R 6 477-00

1387

Liebenberg Malan Mofolo Inc
20 Ueckermann Street
Heidelberg
Tel: (016) 341 4164

Prepared by me

CONVEYANCER
SHARON ENGELBRECHT
(M45829)

DEED OF TRANSFER

BE IT HEREBY MADE KNOWN THAT

T 000068017 / 2023

RONELL ERASMUS (M23159)

appeared before me, the Registrar of Deeds at Pretoria, the said appearer, being duly authorised thereto by a power of attorney granted to her by

The Trustees for the time being of GROOTGELUK FAMILIE TRUST
Registration Number IT2704/2003

signed at Heidelberg on 31 July 2023

And the appearer declared that:

Whereas the Transferor had truly and legally sold the undermentioned properties on 14 April 2021 by Private Treaty

Now therefore the Appearer on behalf of the Transferor, did by these presents, cede and transfer to and on behalf of

POCONAMIX PROPRIETARY LIMITED
Registration Number 2017/498408/07

its successors in title or assigns, in full and free property

1. **REMAINING EXTENT OF PORTION 1 OF THE FARM BLESBOKFONTEIN 580, REGISTRATION DIVISION IQ, PROVINCE OF NORTHWEST**

   MEASURING 165,1854 (ONE HUNDRED AND SIXTY FIVE COMMA ONE EIGHT FIVE FOUR) HECTARES

   FIRST TRANSFERRED BY DEED OF TRANSFER T710/1916 WITH ANNEXED DIAGRAM AND HELD BY DEED OF TRANSFER T36076/2009

SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

2. **REMAINING EXTENT OF PORTION 17 (A PORTION OF PORTION 1) OF THE FARM VLAKPLAATS 555, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

   MEASURING 169,2090 (ONE HUNDRED AND SIXTY NINE COMMA TWO ZERO NINE ZERO) HECTARES

   FIRST TRANSFERRED BY DEED OF TRANSFER T3698/1926 WITH DIAGRAM ANNEXED THERETO AND HELD BY DEED OF TRANSFER T4394/2017

SUBJECT to the following conditions:

A. "Het eigendom mits deze getransporteerd is onderhewig aan de conditie dat het Gouvernement van de unie van Zuid-Afrika als eigenaar van zeker Gedeelte van Gedeelte van gezegde plaats groot 2 morgen gehouden onder Acte van Transport No 7045/1908 gerechtigd zal zyn tot een recht van toegang tot het gezed gedeelte van af de naaste publieke weg loopdende over het eigendom hieronder getransporteer en het recht zal hebben van toegang tot water op gezegd eigendom en het recht om het te gebruiken waar doenlyk voor huishoudelike doeleinden door middle van pompen of andere werktuigen of doop pypen voren of andere wyze insluitende alle odige bykomende rechten."

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

3. **PORTION 51 OF THE FARM VLAKPLAATS 555, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

   MEASURING 801,9251 (EIGHT HUNDRED AND ONE COMMA NINE TWO FIVE ONE) HECTARES

   FIRST REGISTERED BY CERTIFICATE OF CONSOLIDATED TITLE T117900/2005 WITH DIAGRAM SG NUMBER 3490/2003 ATTACHED THERETO AND HELD BY HELD BY DEED OF TRANSFER T117903/2005

SUBJECT to the following conditions:

A. Die voormalige restant van gedeelte 3 en gedeelte 13 ('n gedeelte van gedeelte 3) van die plaas Vlakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng, aangetoon deur die figuur KnDmEK op die kaart LG 3490/2003, is onderhewig aan die volgende voorwaarde: Kragtens Notariële Akte K1141/1976S is die reg aan ESKOM verleen om elektrisiteit oor die hierinvermelde eiendom te Vervoer tesame met bykomende regte en onderworpe aan voorwaardes soos meer volledig sal blyk uit gesegde Notariële Akte. Die middellyne van die oorhoofse kraglyn word voorgestel deur die lyn q1p1n1 en j1k1l1m1 op kaart LG no 3490/2003. Die middellyn van die elektriese kraglyn word voorgestel deur die lyn m1n1 op kaart LG no 3490/2003.

B. Die voormalige van gedeelte 13 ('n gedeelte van gedeelte 3) van die plaas Vlakplaats no 555, Registrasie Afdeling I.Q.,Provinsie Gauteng, aangetoon deur die figuur ImEKI op kaart LG no 3490/2003, is onderhewig aan die volgende voorwaarde: Kragtens Notariële Akte no 216/1953S geregistreer op 12 Maart 1953 is die reg aan ESKOM verleen om elektrisiteit oor die eiendom hieronder getransporteer te Vervoer, tesame met bykomende regte onderhewig aan voorwaardes, soos meer volledig sal blyk uit genoemde notariële Akte en kaart daaraan geheg. Die middellyne van die oorhoofse kraglyne word voorgestel deur die lyne r1e1 en s1d1 op kaart LG no 3490/2003.

C. Die voormalige restant van gedeelte 8 van die plaas Vlakplaats no 555, Registrasie Afdeling IQ., Provinsie Gauteng, aangetoon deur die figuur AjkgfXaedZA1B1C1D1E1A op kaart LG no 3490/2003, is onderhewig aan die volgende voorwaarde:

1. "Die eigenaar van het eigendom onder deze Akte gehouden is gerechtigde om water te leiden, voor besproeiings doeleindes voor 29 uren uit iedere 7 dagen, uit zekere dam gelegen op Gedeelten E.F.H. en J van de plaats voormeld, op 6 Oktober 1921 getransporteerd krachtens Akten van Transport nrs 10410/1921 en wel langs de bestaande watervoor lopende over Gedeelten F en J voormeld.

   ONDERWORPEN ten faveure van de eiegenaren van gedeelte J voormeld en gedeelten K,L en het Resterende Gedeelte groot als zulks 265,5249 hektaar van de plaats voormeld, op 6 Oktober 1921 getransporteerd krachtens Akte van Transport Nrs 10408/1021, 10407/1921, 10411/1921 aan voormeld recht van waterleiding.

   Het wordt echter verstaan dat daar altos ten minste zes duim water boven de middelste pijp van gezegde dam zijn.

   Gezegde dam moet door de eigenaren die gerechtigt zijn tot water daaruit behoorlik in orde gehouden worden."

2. Onderworpen aan die ewigdurende reg vir die gebruik van 'n begrafplaas en 'n reg van oorweg en toegang 6.30 meter wyd ten gunste van ELSIE JOSINA SUSANNA VENTER, gebore Cornelius op 17 Maart 1907 en CHRISTINA VAN SCHALKWYK COETZEE gebore op 21 Oktober 1897 soos meer volledig blyk uit Notariële Akte Nr 663/1959-S gedateer 13 Februarie 1959 en geregistreer op 26 Junie 1959. Die lyne sr en rq stel die oostelike en noordelike grense van die serwituut van reg van weg voor en die figuur wtuvw op kaart LG no 3490/2003 die serwituut van begraafplaas.

D. Die voormalige gedeelte 12 van die plaas Vlakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng, aangetoon deur die figuur bdeab op kaart LG no 3490/2003 is onderhewig aan die volgende voorwaardes; De eigenaar van het eigendom onder deze Akte getransporteerde is gerechtigde om water te leiden, voor besproeiingdoeleindes voor 28 uren uit iedere 7 dagen, uit zeker dam gelegen op Gedeelte E.F.G. en J van de plaats voormeld getransporteerd krachtens Transport Akten Nrs. 10408/1921, 10409/1921 en 10410/1021 en wel langs de bestaande watervoor lopende opver gedeelten F en J voormeld en gedeelten G en K van die plaas voormeld getransporteerd krachtens Transport Akten Nrs. 10406/1921 en 10408/1921.

Onderworpen ten faveure van de eiegenaren van Gedeelte G voormeld en het Resterende Gedeelte, groots als zulks 265,5249 hektaar van de plaats voormeld, getransporteerd krachtens Transport Akte Nr 10411/1921 aan voormelde recht van waterleiding.

Het wordt echter verstaan dan daar altos ten minste zes duim boven de middelste pijp van gezegde dam moet zijn.

Gezegde dam moet door de eigenaren die gerechtigde zijn tot water daaruit behoorlik in orde gehouden worden.

E. Die voormalige gedeelte 19 ('n gedeelte van gedeelte B) van die plaas Vlakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng, aangetoon deur figuur jBhkj op kaart LG no 3490/2003 is onderhewig aan Notariële Akte Nr 140/1953S geregistreer op 19 Februarie 1953, is die reg aan ELEKTRISITEITSVOORSIENINGSKOMMISSIE verleen om elektrisiteit oor die eiendom Hiermee getransporteer te Vervoer, tesame met bykomende regte en onderhewig aan kondisie, soos meer volledig blyk uit Notariële Akte. Die middellyne van die oorhoofse kraglyne word voorgestel deur die lyne h1g1f1 en za1b1 op kaart LG no 3490/2003.

F. Die voormalige gedeelte 11 van die plaas Vlakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng, aanagetoon deur die figuur YZdbY op kaart LG no 3490/2003 is onderhewig aan die volgende voorwaarde:

1. Die eigenaren van die eigendom onder deze Akte gehouden is gerechtigd te leiden, voor besproeiings, voor 27 uren iedere 7 dagen, uit zekere dam gelegen op Gedeelten E.F.H. en J van de plaats voormeld getransporteerd krachtens Akten van Transport nrs 10408/1921, 10407/1921 en 10410/1921 en wel langs de bestaande watervoor lopende over gedeelten F en J voormeld en gedeelte G van de plaats voormeld getransporteerd krachtens Akte van Transport Nr 10406/1921.

2. Onderworpen ten faveure van eiegenaren van Gedeelte G voormeld en Gedeelte L en het Resterende Gedeelte van de plaats voormeld groot als zulks 265,5249 hektaar, getransporteerd krachtens Akten van Transport Nrs 10409/1921 en 10411/1921 van voormelde recht van waterleiding.

   Het wordt echter verstaan dat daar altos ten minste zes duim water boven de middelste pijp van gezegde dam moet zijn.

   Gezegde dam moet door de eigenaren die gerechtigt zijn tot water daaruit behoorlik in orde gehouden worden.

G. Die voormalige restant van die plaas Vlakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng, aangedui deur die figuur XfghMNTUVWX op kaart LG no 3490/2003 is onderhewig aan die volgende voorwaarde:

1. "Die eienaar van het eigendom onder deze Akte gehouden is gerechtigde om water te leiden, voor besproeiings doeleinden voor 31 uren uit iedere 7 dagen, uit zekere dam gelegen op gedeelten E,F,H en J, van die plaats voormeld heden getransporteerd krachtens Akten van Transport Nos 10408/1921, 10409/1921 en10407/1921 en wel langs de bestaande watervoor lopende over gedeelten F en J voormeld en gedeelten G,K en L van de plaats voormeld, heden getransporteerde krachtens Akten van Transport Nos. 10406/1921, 10408/1921 en 10407/1921 en door de bestaande watervoor lopende over gedeelte J voormeld.

   Het word echter verstaan dat daar altos ten minste zes dim water boven de middelste pijp van gezegde dam moet zijn

   Gezegde dam moet door de eigenaren nie gerechtigde zijn tot water daaruit behoorlik in orde gehouden worden.

2. ONDERHEWIG aan die reg ten gunste van die Elektrisiteitsvoorsieningskommissie om elektrisiteit oor die bogenoemde eiendom te Vervoer tesame met bykomende regte en onderhewig aan kondisie soos vollediger blyk uit Notariële Akte Nr 443/1953-S geregistreer op 4 Junie 1953. Die midellyn van die elektriese kraglyne word voorgestel deur die lyne t1u1f1 en v1w1b1 op kaart LG no 3490/2003.

H. GEDEELTE 5 van gedeelte van die plaas Vlakplaats no 555 (Nr 76) (waarvan die gedeeltes aangedui deur die figure JFGHJ en SPQRS op kaart LG 3490/2003 gedeeltes van uitmaak) is onderhewig aan die kondisie dat die Republiek van Suid-Afrika als eienaar van zeker Gedeelte van Gedeelte van gezegde plats groot 1,7131 hektare, gehouden onder Akte van Transport T7045/1908 gerechtigde zal zyn tot een recht vfan toegang tot het gedeelte van al den naaste publieke weg lopende over het eigendom en het recht zal hebben van toegang tot water op gezegde eigendom ('n gedeelte waarvan Hiermee getransporteer word) en het recht (zal hebben van toegang tot water op gesegd eigendom ['n gedeelte waarvan Hiermee getransporteer word]) om het te gebruiken waar doenlyk daarvoor door huishoudelike doeleinden door middel van pompen of andere werktuigen of door pypen, voren of andere wyze insluitende alle nodige bykomende rechten.

I. Gedeelte27 ('n gedeelte van gedeelte 5 van 'n gedeelte van die plaas Vlakplaats 555 (No 76) soos gehou kragtens Transportakte T29608/1945 (waarvan die gedeeltes aangedui deur die figure JFGHJ en SPQRS op kaart LG no 3490/2003 gedeeltes van uitmaak) is geregtig tot 'n serwituut van Reg van Weg 15,74 meter wyd soos aangedui op kaart A6608/47 oor Resterende Gedeelte van gedeelte van die plaas Vlakplaats 555 (No 76), I.Q., Transvaal, groot 340,0432 hektare soos gehou kragtens Akte van Transport T3699/1926 welke reg van weg volledig beskrywe is in Notariële Akte 614/48-S.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

4. **PORTION 52 OF THE FARM VLAKPLAATS 555, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

MEASURING 374,3061 (THREE HUNDRED AND SEVENTY FOUR COMMA THREE ZERO SIX ONE) HECTARES

FIRST REGISTERED BY CERTIFICATE OF CONSOLIDATED TITLE T117901/2005 WITH DIAGRAM SG NUMBER 3491/2003 ATTACHED THERETO AND HELD BY DEED OF TRANSFER T117903/2005

SUBJECT to the following conditions:

A. Onderhewig aan die kondsie dat die Goeverment van die Republiek van Suid Afrika als eigenaar van zeker Gedeelte van Gedeelte van gesegde plaats groot 1,7131 hektaar gehouden onder acte van Transport nr T7045/1908 zal zyn tot een recht van toegang tot het gezegde gedeelte van af den naaste publiek weg lopende over eigendom ('n gedeelte waarvan hieronder getransporteer word) en dat recht zal hebben van toegang tot water op gezegde eigendom ('n gedeelte waarvan hieronder getransporteer word en het recht om het te gebruiken waar doenlyn voor huishoudelike doeleinden door middel van pompen werktuigen of door pypen, voren of andere wyze all nodige bykomende rechten.

B. RESTERENDE GEDEELTE van Gedeelte 27 ('n gedeelte van gedeelte 170 van die plaas Vlakplaats 555, Resterende Afdeling I.Q., soos aangedui kragtens Transportakte Nr T29608/1945 (waarvan die eiendom aangedui deur figuur GHdf op kaart LG no 3491/2003 deel vorm) is: GEREGTIG tot 'n serwituut van reg van weg 15,74 meter wyd, soos aangedui op kaart No A6608/47 oor die Resterende gedeelte van die plaas Vlakplaats 555, Registrasie Afdeling I.Q., Provinsie Gauteng, groot as sodanige 340,0432 (DRIE VIER NUL KOMMA NUL VIER DRIE TWEE) hektaar soos gehou kragtens Akte van Transport Nr 3699/1926, welke Reg van Weg volledig beskrywe is in Notariële Akte Nr 614/48-S.

C. Die voormalige resterende gedeelte van gedeelte 27 ('n gedeelte van gedeelte 17) en gedeelte 46 ('n gedeelte van gedeelte 27) van die plaas Vlakplaats 555, Registrasie Afdeling I.Q., Provinsie Gauteng aangedui deur figuur ebaHdFe op kaart LG no 3491/2003 is onderhewig aan 'n serwituut van Reg van Weg ten gunste van die Algemene Publiek en welke Serwituut aangedui word deur die figuur ebjhge en bklnmdfb op kaart LG no 3491/2003, soos meer volledig sal blyk uit Notariële Akte van Reg van Weg Nr 864/48-S.

D. Die voormalige resterende gedeelte van gedeelte 1 van die plaas Vlakplaats no 555, Registrasie Afdeling I.Q., Provinsie Gauteng (aangedui deur die figuur ABCDEdJKLMNPQRA op kaart LG no 3491/2003) is onderhewig aan Notariële Akte No 614/1948S waarkragtens die bovermelde eiendom, groot 340,0432 hektaar, onderhewig is aan 'n Serwituut van Reg van Weg 15,24 meters wyd ten gunste van Gedeelte 27 ('n gedeelte van Gedeelte 5 van Gedeelte) van die plaas VLAKPLAATS 555, distrik Vereeniging, groot 171,3081 hektaar, gehou onder Akte van Transport Nr 29068/2945 gedateer 22 November 1945. Die serwituut word voorgestel deur figuur pdJrqp op kaart LG3491/2003.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

5. **REMAINING EXTENT OF PORTION 3 OF THE FARM RIETKUIL 554, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

   MEASURING 85,6532 (EIGHTY FIVE COMMA SIX FIVE THREE TWO) HECTARES

   FIRST REGISTERED BY CERTIFICATE OF PARTITION TRANSFER 9553/1912 WITH DIAGRAM ATTACHED THERETO AND HELD BY DEED OF TRANSFER T98959/2016

SUBJECT to the following conditions:

A. Die regte van die Staatspresident soos bepaal in Artikel vier-en-dertig van die Kroongrond Nderzettings Wet, 1912, betreffende sekere werke op die grond.

B. "SUBJECT to the right granted to ESKOM to convey electricity over the hereinmentioned property together with ancillary rights and subject to the conditions as will more fully appear from Deed of Servitude 1382/`958S."

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

6. **REMAINING EXTENT OF PORTION 9 (A PORTION OF PORTION 3) OF THE FARM RIETKUIL 554, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

   MEASURING 189,7478 (ONE HUNDRED AND EIGHTY NINE COMMA SEVEN FOUR SEVEN EIGHT) HECTARES

   FIRST REGISTERED BY CERTIFICATE OF PARTITION TRANSFER 10179/1929 WITH DIAGRAM ATTACHED THERETO AND HELD BY DEED OF TRANSFER T98959/2016

SUBJECT to the following conditions:

A. Die regte van die Staatspresident soos bepaal in Artikel vier-en-dertig van die Kroongrond Nederzettings Wet, 1912, betreffende sekere werke op die grond.

B. Kragtens Notariële Akte K1141/1976S is die reg aan ESKOM verleen om elektrisiteit oor die hierin vermelde eiendom te Vervoer, tesame met bykomende regte en onderworpe aan voorwaardes oos meer volledig sal blyk uit gesegde Notariële Akte.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

7. **PORTION 26 (A PORTION OF PORTION 3) OF THE FARM RIETKUIL 554, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

MEASURING 85,6532 (EIGHTY FIVE COMMA SIX FIVE THREE TWO) HECTARES

FIRST TRANSFERRED BY DEED OF PARTITION T10607/1957 WITH ANNEXED DIAGRAM AND HELD BY DEED OF TRANSFER T98959/2016

SUBJECT to the following conditions:

A. Die regte van die Staatspresident soos bepaal in Artikel vier-en-dertig van die Kroongrond Nederzettings Wet, 1912, betreffende sekere werke op die grond.

B. Kragtens Notariële Akte K1141/1976S is die reg aan ESKOM verleen om elektrisiteit oor die hierin vermelde eiendom te Vervoer, tesame met bykomende regte en onderworpe aan voorwaardes oos meer volledig sal blyk uit gesegde Notariële Akte.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

8. **PORTION 20 OF THE FARM VLAKPLAATS 555, REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG**

MEASURING 6,8523 (SIX COMMA EIGHT FIVE TWO THREE) HECTARES

FIRST TRANSFERRED BY DEED OF TRANSFER T3830/1940 WITH DIAGRAM ATTACHED THERETO AND HELD BY DEED OF TRANSFER T4395/2017

SUBJECT to the following conditions:

A. GEDEELTE 5 VAN Gedeelte van die plaas VLAKPLAATS 555, Registrasie Afdeling I.Q.,voormeld (Gedeelte 20 waarvan groot 6,8523 hektaar, hieronder getransporteer word) is onderhewig aan die volgende voorwaarde:-
"Het eigendom mits deze getransporteerd is onderhewig aan de conditie dat het Gouvernement van de unie van Zuid-Afrika als eigenaar van zeker Gedeelte van Gedeelte van gezegde plaats, groot 1,7131 hektaar, getransporteerde kragtens Acte van Transport Nr T7045/1908 gerechtigd zal zyn tot een recht van toegang tot het gezegd Gedeelte vanaf die naaste publieke weg loopende over het eigendom hieronder getransporteerd en het recht zal hebben van toegang tot water op gezegd eigendom en het recht om het te gebruiken waar doenlik voor huishoudelike doeleinden door middel van pompen of andere werktuigen of door pypen, voren of andere wyze insluitende alle nodige bekomende rechten."

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

WHEREFORE the appearer, renouncing all the rights and title the said

The Trustees for the time being of GROOTGELUK FAMILIE TRUST

heretofore had to the premises, did, in consequence also acknowledge them to be entirely dispossessed of, and disentitled to, the same; and that, by virtue of these presents, the said

its successors in title or assigns, now is and henceforth shall be entitled thereto, conformably to local customs; the State, however, reserving its rights, and finally acknowledging that the purchase price is the amount of R118 419 525,00 (One Hundred and Eighteen Million Four Hundred and Nineteen Thousand Five Hundred and Twenty Five Rand) VAT inclusive.

IN WITNESS WHEREOF I, the said Registrar, together with the appearer, have subscribed to these presents, and have caused the seal of office to be affixed thereto.

THUS DONE AND EXECUTED at the Office of the Registrar of Deeds at Pretoria on

2023 -11- 0 3

Signature of appearer *q.q.*

In my presence

Registrar of Deeds

1387

Liebenberg Malan Mofolo Inc
20 Ueckermann Street
Heidelberg
Tel: (016) 341 4164

DEED OF TRANSFER

in favour of

POCONAMIX PROPRIETARY LIMITED

over

PORTION 5 OF THE FARM VLAKPLAATS 555

SEËLREG
STAMP DUTY R.....
FEES R 2 909-00

1387

Liebenberg Malan Mofolo Inc
20 Ueckermann Street
Heidelberg
Tel: (016) 341 4164

Prepared by me

CONVEYANCER
SHARON ENGELBRECHT
(M45829)

DEED OF TRANSFER

BE IT HEREBY MADE KNOWN THAT

T 000068018 / 2023

RONELL ERASMUS (M23159)

appeared before me, the Registrar of Deeds at Pretoria, the said appearer, being duly authorised thereto by a power of attorney granted to her by

The Trustees of GROOTGELUK FAMILIE TRUST
Registration Number IT2704/2003

signed at **HEIDELBERG** on **31 JULY 2023**

And the appearer declared that:

Whereas the Transferor had truly and legally sold the undermentioned property on 14 April 2021 by Private Treaty

Now therefore the Appearer on behalf of the Transferor, did by these presents, cede and transfer to and on behalf of

POCONAMIX PROPRIETARY LIMITED
Registration Number 2017/498408/07

its successors in title or assigns, in full and free property

PORTION 5 OF THE FARM VLAKPLAATS 555,
REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG

MEASURING 101,4648 (ONE HUNDRED AND ONE COMMA FOUR SIX FOUR EIGHT) HECTARES

FIRST TRANSFERRED BY DEED OF TRANSFER T10407/1921 WITH DIAGRAM ATTACHED THERETO AND HELD BY DEED OF TRANSFER T11694/2021

SUBJECT to the following conditions:

"Kragtens Noariële Akte Nommer 140/1953 S is die reg aan die Elektrisiteitsvoorsienings-kommissie verleen om elektrisiteit oor die eiendom hieronder getransporteer te vervoer, tesame met bykomende regte, en onderhewig aan kondisies, soos meer volledig sal blyk uit genoeme Notariële Akte geregistreer op 19 Februarie 1953".

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

WHEREFORE the appearer, renouncing all the rights and title the said

The Trustees of GROOTGELUK FAMILIE TRUST

heretofore had to the premises, did, in consequence also acknowledge them to be entirely dispossessed of, and disentitled to, the same; and that, by virtue of these presents, the said

POCONAMIX PROPRIETARY LIMITED

its successors in title or assigns, now is and henceforth shall be entitled thereto, conformably to local customs; the State, however, reserving its rights, and finally acknowledging that the purchase price is the amount of R6 432 234,17 (Six Million Four Hundred and Thirty Two Thousand Two Hundred and Thirty Four Rand and Seventeen Cents) VAT inclusive.

IN WITNESS WHEREOF I, the said Registrar, together with the appearer, have subscribed to these presents, and have caused the seal of office to be affixed thereto.

THUS DONE AND EXECUTED at the Office of the Registrar of Deeds at Pretoria on

2023 -11- 0 3

Signature of appearer *q.q.*

In my presence

Registrar of Deeds

ANNEXURE E

HL WATTRUS & ASSOCIATES SURVEYOR CC

PROFESSIONAL LAND SURVEYORS
ENGINEERING SURVEYORS
SECTIONAL TITLE CONSULTANTS
ESTABLISHED 1984

1st FLOOR, BLOCK 4
BEAULIEU OFFICE PARK
STALLION ROAD
CROWTHORNE AH
1684

TEL: 011 486 1274

E-mail: info@hwls.co.za
Website: www.hwls.co.za

PO BOX 1288
LONE HILL
2062

VAT NUMBER: 4020256527
CK NUMBER: 2010/056810/23

Date: 14th March 2025 **Our Ref: 7490**

LAND SURVEYOR'S CERTIFICATE

REMAINDER OF THE FARM KLIPKLOP No. 530-IQ (SG No. 472/1896)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T46824/2007, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

1. The former Remaining Portion of the said Farm Klipkop No. 530, situated in the Vanderbijlpark District, measuring 1878,3132 hectares (of which the property transferred above constitutes a portion), is subject to two Rights of Way in favour of the General Public, as will be more fully apparent from Notarial Deed No. 752/1945-S, dated 27 January 1945 and Diagrams annexed thereto.
2. In terms of Notarial Deed of Session No. 755/1945 dated 16 May 1945, all commercial rights to the former Remaining Portion of the said Farm Klipkop, measuring 1856,1048 hectares (of which the property hereunder transferred constitutes a portion) are ceded to JOHANNES CHRISTIAAN VAN DER WALT as owner of Portion 26, measuring 21,4133 hectares of the said farm held under Deed of Transfer T29288/1945, dated 20 November 1945, in accordance with the provisions contained in the said Deed of Cession.
3. In terms of Section 11(1)B of Act 37/1955, a portion measuring approximately 5,1463 hectares, of the property hereby transferred, is expropriated by the Republic of South Africa (in its administration of the South African Transport Service).
4. Subject to a reservation of all rights to Minerals in favour of Jan Hermanus Cronje Muller, Identity Number 5008195016082, married out of community of property, as will be more fully apparent from Certificate of Mineral Rights K6591/1993RM.

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

Subject to such conditions as are mentioned or referred to in the aforesaid Deed/s.

<u>Land surveyor Notes:</u>

Due to the geographical location of the Rights of Way servitudes mentioned in condition 1), it does not affect the current Remainder of the said farm Klipkop.

The Remainder of the said farm Klipkop is affected by the new PWV-5 proposed road alignment.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

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LAND SURVEYOR'S CERTIFICATE

REMAINDER OF PORTION 47 OF THE FARM KLIPKLOP No. 530-IQ (SG No. 6879/2002)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T5973/2007, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

A. Subject to a servitude in favour of ESKOM to transmit electricity over the property, together with additional rights and subject to the conditions as will be more fully apparent from Notarial Deed of Servitude 268/1954S the centre lines of the electric power line and underground cables are represented by the lines dh and ej on the said diagram SG No. 6879/2002.
B. Subject to a servitude in favour of ESKOM to transmit electricity over the property, together with additional rights and subject to the conditions as will be more fully apparent from Notarial Deed of Servitude 396/1971S the centre lines of the electric power line and underground cables are represented by the line fkg on the said diagram SG No. 6879/2002.
C. Subject to the provisions of Section 11 (1)(B) of Act 37 of 1955 in terms of which a portion of the above property has been expropriated by the South African Railways and Ports Administration as will be more fully apparent from Expropriation Notice T217/1963 filed with Deed of Transfer 5098/1917.

Subject to such conditions as are mentioned or referred to in the aforesaid Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

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LAND SURVEYOR'S CERTIFICATE

REMAINDER OF PORTION 9 (A PORTION OF PORTION 3) OF THE FARM RIETKUIL No. 554-IQ (SG No. A1058/1929)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T68017/2023, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

A. The rights of the State President as provided for in Section thirty-four of the Crown Land Settlements Act, 1912, relating to certain works on the land.
B. By virtue of Notarial Deed K1141/1976S the right was granted to ESKOM to transmit electricity over the property herein mentioned, together with ancillary rights and subject to provisions as will be more fully apparent from the said Notarial Deed.

And further subject to all such conditions as are mentioned or referred to in the aforementioned Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

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CK NUMBER: 2010/056810/23

Date: 14th March 2025 **Our Ref: 7490**

LAND SURVEYOR'S CERTIFICATE

PORTION 26 (A PORTION OF PORTION 3) OF THE FARM RIETKUIL No. 554-IQ (SG No. A6777/1956)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T68017/2023, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

A. The rights of the State President as provided for in Section thirty-four of the Crown Land Settlements Act, 1912, relating to certain works on the land.
B. By virtue of Notarial Deed K1141/1976S the right was granted to ESKOM to transmit electricity over the property herein mentioned, together with ancillary rights and subject to provisions as will be more fully apparent from the said Notarial Deed.

And further subject to all such conditions as are mentioned or referred to in the aforementioned Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

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VAT NUMBER: 4020256527
CK NUMBER: 2010/056810/23

Date: 14th March 2025 **Our Ref: 7490**

LAND SURVEYOR'S CERTIFICATE

REMAINDER OF PORTION 3 OF THE FARM RIETKUIL No. 554-IQ (SG No. A741/1912)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T68017/2023, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

A. The rights of the State President as provided for in Section thirty-four of the Crown Land Settlement Act, 1912, relating to certain works on the land.
B. Subject to the right granted to ESKOM to convey electricity over the herein mentioned property together with ancillary rights and subject to the conditions as will more fully appear from Deed of Servitude 1382/58S.

And further subject to all such conditions as are mentioned or referred to in the aforementioned Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

HL WATTRUS & ASSOCIATES SURVEYOR CC

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2062

VAT NUMBER: 4020256527
CK NUMBER: 2010/056810/23

Date: 14th March 2025 **Our Ref: 7490**

LAND SURVEYOR'S CERTIFICATE

PORTION 7 OF THE FARM VLAKPLAATS No. 555-IQ (SG No. A456/1921)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T68016/2023, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

a) "The owner of the property hereunder is entitled to draw water, for irrigation purposes, for 26 hours out of every 7 days, from a certain dam situated on the property hereunder and Portions E (portion 6), H (Portion 9) and J (Portion 10) of the aforesaid farm, transferred on the 6th October 1921, by virtue of Deeds of Transfer Nos. 10408/1921, 10407/1921 and 10410/1921.

b) SUBJECT to the benefit of the owners of Portion J (Portion 10) aforesaid and Portions K (Portion 11), L (Portion 12), G (Portion 8) and the Remaining Portion of the aforesaid place, measuring 265,5249 hectares, transferred on the 6th October 1921, by virtue of Deeds of Transfer Nos. 10408/1921, 10407/1921, 10406/1921 and 10411/1921 to the aforementioned right of water supply.

   It is understood, however, that there must always be at least six inches of water above the middle pipe of said dam.

   Said dam must be properly maintained by the owners who are entitled to water therefrom.

c) The owner of the property held under this Deed is further entitled to water his cattle in said dam with right of access.

d) By virtue of Notarial Deed No 140/1953S registered on 19 February 1953, the right is granted to the ESKOM for electricity to be transported over the Portion to be transferred, together with additional rights, and subject to conditions, as fully appear in said Notarial Deed.

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

And further subject to all such conditions as are mentioned or referred to in the aforementioned Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

HL WATTRUS & ASSOCIATES SURVEYOR CC

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ENGINEERING SURVEYORS
SECTIONAL TITLE CONSULTANTS
ESTABLISHED 1984

1st FLOOR, BLOCK 4
BEAULIEU OFFICE PARK
STALLION ROAD
CROWTHORNE AH
1684

TEL: 011 486 1274

E-mail: info@hwls.co.za
Website: www.hwls.co.za

PO BOX 1288
LONE HILL
2062

VAT NUMBER: 4020256527
CK NUMBER: 2010/056810/23

Date: 14th March 2025 **Our Ref: 7490**

LAND SURVEYOR'S CERTIFICATE

PORTION 51 OF THE FARM VLAKPLAATS No. 555-IQ (SG No. 3490/2003)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T68017/2023, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

A. The former Remainder of Portion 3 and Portion 13 (a portion of Portion 3) of the Farm Vlakplaats No 555, Registration Division I.Q, Province of Gauteng, shown by the figure KnDmEK on diagram SG No. 3490/2003, is subject to the following condition:

   By virtue of Notarial Deed K1141/1976S the right was granted to ESKOM to transmit electricity over the property mentioned together with additional rights and subject to conditions as will be more fully apparent from the said Notarial Deed. The centre lines of the power line are represented by the line q1p1n1 and j1k1l1m1 on diagram SG No. 3490/2003. The centre line of the electric power line is represented by the line m1n1 on diagram SG No. 3490/2003.

B. The former Portion 13 (a portion of Portion 3) of the farm Vlakplaats No 555, Registration Division I.Q, Province of Gauteng, shown by the figure lmEKI on diagram SG 3490/2003, is subject to the following conditions:

   By virtue of Notarial Deed No. 216/1953S, registered on 12 March 1953, the right was granted to ESKOM to transport electricity over the property hereunder, together with additional rights subject to conditions, as will be more fully apparent from the said Notarial Deed and diagram annexed thereto. The centre lines of overhead power lines are represented by lines r1e1 and s1d1 on diagram SG No.3490/2003.

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

C. The former Remainder of Portion 8 of the farm Vlakplaats No.555, Registration Division I.Q, Province of Gauteng, shown by the figure AjkgfXaeZA1B1C1D1E1A on diagram SG No.3490/2003, is subject to the following conditions:

1. "The owner of the property held under this Deed is entitled to draw water, for irrigation purposes, for 29 hours out of 7 days, from a certain dam located on Portions E (Portion 6), F (Portion 7), H (Portion 9)and J (Portion 10) of the aforesaid farm, transferred on 6 October 1921, by virtue of Deed of Transfer No. 10410/1921 and indeed along the existing water furrow running over aforesaid Portions F (Portion 7) and J (Portion 10).

   SUBJECT in favor of the owners of the aforesaid Portion J (Portion 10) and Portions K (Portion 11), L (Portion 12) and the Remaining Portion, measuring 265, 5249 hectares of the aforesaid farm, transferred on 6 October 1921, by virtue of Deeds of Transfer Nos. 10408/1921, 10407/1921, 10411/1921 to the aforesaid right of water supply.

   However, it is understood that there must always be at least six inches of water above the middle pipe of said dam.

   Said dam must be properly maintained by those owners who are entitled to use water from it. Done

2. Subject to the Perpetual Right of Use of a Cemetery and a Right of Way and access, 6.30 metres wide, in favour of ELSIE JOSINA SUSANNA VENTER, born Cornelius on 17 March 1907 and CHRISTINA VAN SCHALKWYK COETZEE, born on 21 October 1897, as more fully appears from Notarial Deed No. 663/1959-S dated 13 February 1959 and registered on 26 June 1959. The lines sr and rq represent the Eastern and Northern boundaries of the Servitude of Right of Way and the figure wtuvw on diagram SG No. 3490/2003 represents the Servitude for the Cemetery.

D. The former Portion 12 of the Farm Vlakplaats Nr. 555, Registration Division I.Q, Province of Gauteng, shown by the figure bdeab on diagram SG No. 3490/2003 is subject to the following conditions:

   The owner of the property transferred under this Deed is entitled to draw water, for irrigation purposes, for 28 hours out of every 7 days, from a certain dam located on Portions E (Portion 6), F (Portion 7), G (portion 8) and J (Portion 10) of the aforesaid farm, transported by virtue of Deeds of Transfer Nos. 10408/1921, 10409/1921 and 10410/1921 and indeed along the existing water furrow running over aforesaid Portions F (Portion 7) and J (Portion 10) and Portions G (Portion 8) and K (Portion 11) of the aforesaid farm transported, Bu Virtue of Deeds of Transfer Nos. 10406/1921 and 10408/1921.

Subject in favor of the owners of the aforesaid Portion G (Portion 8) and the Remaining Portion, measuring 265,5249 hectares of the aforesaid site, by virtue of Deed of Transfer No. 10411/1921 to the aforesaid right of water supply.

However, it is understood that there must always be at least six inches of water above the middle pipe of said dam.

Said dam must be properly maintained by those owners who are entitled to use water from it.

E. The former Portion 19 (a portion of Portion 2) of the farm Vlakplaats No. 555, Registration Division I.Q, Province of Gauteng, shown by figure jBhkj on diagram SG No. 3490/2003 is subject to Notarial Deed No. 140/1953S, registered on 19 February 1953, the right was granted to the ESKOM to transport electricity over the area hereby transferred to the aforesaid Deed of Transfer, together with additional rights and subject to conditions, as more fully appear in the Notarial Deed. The centre lines of overhead power lines are represented by lines h1g1f1 and za1b1 on diagram SG No. 3490/2003. Done

F. The former Portion 11 of the Farm Vlakplaats Nr. 555, Registration Division I.Q, Province of Gauteng, shown by figure YZdbY on the diagram SG No. 3490/2003 is subject to the following conditions:

1. The owners of the property under this Deed are entitled to draw water , for irrigation purposes, for 27 hours out of every 7 days, from a certain dam located on Portions E (Portion 6), F (Portion 7), H (Portion 9) and J (Portion 10) of the aforesaid farm, subject to Deed of Transfer Nos. 10408/1921, 10407/1921 and 10410/1921 and as well as the existing water furrow running over portions F (Portion 7) and J (Portion 10) and portion G (Portion 8) of the farm aforesaid transfer, by virtue of Deed of Transfer No. 10406/1921.
2. Subject in favour of owners of the aforesaid Portion G (Portion 8) and Portion L (Portion 12)and the Remaining Portion of the aforesaid farm, measuring 265,5249 hectares, by virtue of Deed of Transport Nos. 10409/1921 and 10411/1921 of aforesaid right of water supply.

   However, it is understood that there must always be at least six inches of water above the middle pipe of said dam.

   Said dam must be properly maintained by those owners who are entitled to use water from it.

G. The former Remainder of the Farm Vlakplaats No. 555, Registration Division I.Q, Province of Gauteng, shown by figure XfghMNTUVWX on diagram SG No. 3490/2003 is subject to the following condition:

1. "The owner of the property under this Deed is entitled to draw water, for irrigation purposes, for 31 hours out of every 7 days, from a certain dam situated on Portions E (Portion 6), F (Portion 7), H (Portion 9) and J (Portion 10) of that aforesaid farm,

transferred by virtue of Deeds of Transfer Nos. 10408/1921, 10409/1921 and 10407/1921 and along the existing water furrow running over the aforesaid Portions F (Portion 7) and J (Portion 10) and Portions G (Portion 8), K (Portion 11) and L (Portion 12) of the aforesaid farm, transferred by virtue of Deeds of Transfer Nos. 10406/1921, 10408/1921 and 10407/1921 and by the existing water furrow running over aforesaid Portion J (Portion 10).

However, it is understood that there must always be at least six inches of water above the middle pipe of said dam.

Said dam must be properly maintained by those owners who are entitled to use water from it.

2. SUBJECT to the right in favour of ESKOM to transmit electricity over the above-mentioned property together with additional rights, subject to conditions as are fully apparent from Notarial Deed No. 443/1953S, registered on 4 June 1953. The centre line of the electric power lines is represented by lines t1u1f1 and v1w1b1 on diagram SG No. 3490/2003.

H. PORTION 5 (later renamed to Portion 17) of part of the farm Vlakplaats No. 555 (No 76), (of which portions indicated by the figure JFGHJ and SPQRS on diagram SG No 3490/2003 constitute portions), subject to the condition that the Republic of South Africa is the owner of a certain portion of Portion of the said farm, measuring 1,7131 hectares, held under Deed of Transfer T7045/1908, shall be entitled to one ownership and has the right of access to that part of the nearest public road running over the portion of which is transferred Herewith) and has the right (shall have access to water on said property [a portion of which is Herewith transferred]) to use it, where appropriate, for domestic purposes, by means of pumps or other tools, or by pipes, furrows, or other means, including all necessary additional rights.

Land Surveyor's note:

Title Deed T7045/1908 refers to Portion 2 of the farm Vlakplaats No. 555 – IQ (representing 2 Morgen, or 1,7131ha) . Due to the geographical location of Portion 2, the above-mentioned Portion is not affected by this condition in terms of right of access. I cannot comment to having access to water though.

I. Portion 27 (a portion of Portion 5 (later renamed Portion 17) of the Farm Vlakplaats No. 555 (No. 76) as held under Deed of Transfer T29608/1945 (of which the portions indicated by figure JFGHJ and SPQRS on Diagram S.G. No. 3490/2003 constitute portions of), is entitled to a Servitude of Right of Way, 15,74 metres wide as indicated on diagram SG No. A6608/47, over the Remaining portion of a Portion of the farm Vlakplaats 555 (No. 76), I.Q., Transvaal, measuring 340,0432 hectares, as held under Deed of Transfer T3699/1926 ,which Right of Way is fully described in Notarial Deed 614/48-S.

And further subject to all such conditions as are mentioned or referred to in the aforementioned Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

HL WATTRUS & ASSOCIATES SURVEYOR CC

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1st FLOOR, BLOCK 4
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CROWTHORNE AH
1684

TEL: 011 486 1274

E-mail: info@hwls.co.za
Website: www.hwls.co.za

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VAT NUMBER: 4020256527
CK NUMBER: 2010/056810/23

Date: 14th March 2025 **Our Ref: 7490**

LAND SURVEYOR'S CERTIFICATE

PORTION 20 OF THE FARM VLAKPLAATS No. 555-IQ (SG No. A13/1940)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T68017/2023, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

A. PORTION 5 OF Part of this Farm VLAKPLAATS 555, Registration Division I.Q., mentioned above (Portion 20 of which 6,8523 hectares is transferred below) is subject to the following condition:
B. "The property hereunder transferred is subject to the condition that the Government of the Union of South Africa, being the owner of a certain portion of Portion of the said farm, measuring 1.7131 hectares, transferred by virtue of Deed of Transfer No. T7045/1908, shall be entitled to a right of access to the said Portion from the nearest public road passing over the property transferred hereunder and shall have the right of access to water on the said property and the right to use it where practical, for domestic purposes, by means of pumps or other implements or by pipes, furrows or otherwise, including all necessary ancillary rights.

Land Surveyor's Note:

Title Deed T7045/1908 refers to Portion 2 of the farm Vlakplaats No. 555 – IQ (representing 2 Morgen, or 1,7131ha) . Due to the geographical location of Portion 2, the above-mentioned Portion is not affected by this condition in terms of right of access. I cannot comment on having access to water though.

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

And further subject to all such conditions as are mentioned or referred to in the aforementioned Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

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CROWTHORNE AH
1684

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LAND SURVEYOR'S CERTIFICATE

REMAINING EXTENT OF PORTION 17 OF THE FARM VLAKPLAATS No. 555-IQ (SG No. A4543/1925)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T68017/2023, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following conditions:

A. "The property herewith transferred is subject to the condition that the Government of the Union of South Africa as owner of a certain portion of Portion of the said farm measuring 2 morgen, held under Deed of Transfer No. T7045/1908 shall be entitled to a right of access to the said portion from the nearest public road running across the property hereunder transferred and shall have the right of access to water on the said property and the right to use the same where practical for domestic purposes by means of pumps or other machinery or by pipes or otherwise, including all necessary additional rights".

Land Surveyor's Note:

Title Deed T7045/1908 refers to Portion 2 of the farm Vlakplaats No. 555 – IQ (representing 2 Morgen, or 1,7131ha) . Due to the geographical location of Portion 2, above mentioned Portion is not affected by this condition in terms of right of access. I cannot comment having access to water though.

And further subject to all such conditions as are mentioned or referred to in the aforementioned Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

HL WATTRUS & ASSOCIATES SURVEYOR CC

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CK NUMBER: 2010/056810/23

Date: 14th March 2025 **Our Ref: 7490**

LAND SURVEYOR'S CERTIFICATE

PORTION 52 OF THE FARM VLAKPLAATS No. 555-IQ (SG No. 3491/2003)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T68017/2023, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

A. Subject to the condition that the Government of the Republic of South Africa, as owner of a certain Portion of Portion of the said site, measuring 1,7131 hectares, held under Deed of Transfer No. T7045/1908, shall have a right of access to the said portion of the property running from the nearest public road (a portion of which is transferred below) and that it shall have a right of access to water on the said property (a portion of which will be transferred below) and has the right to use it, for domestic purposes by means of pumps, tools or through pipes, furrows, or other ways, including all necessary ancillary rights.

Land Surveyor's Note:
Title Deed T7045/1908 refers to Portion 2 of the farm Vlakplaats No. 555 – IQ (representing 2 Morgen, or 1,7131ha) . Due to the geographical location of Portion 2, above mentioned Portion is indeed affected by this condition.

B. REMAINING PORTION of Portion 27 (a portion of Portion 17) of the farm Vlakplaats 555, Registration Division I.Q.), as indicated in terms of Deed of Transfer No. T29608/1945 (of which the property indicated by figure aHdf on diagram SG No. 3491/2003 forms part) is:

ENTITLED to a Servitude of Right of Way 15,74 metres wide, as indicated on diagram SG No. A6608/47, over the Remaining portion of the farm Vlakplaats 555, Registration Division I.Q.,

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

Province of Gauteng, measuring as such 340, 0432 hectares, as held in terms of Deed of Transfer No. 3699/1926, which Right of Way is fully described in Notarial Deed No. 614/48-S.

C. The former Remaining Portion of Portion 27 (a portion of Portion 17) and Portion 46 (a portion of Portion 27) of the Farm Vlakplaats 555, Registration Division I.Q., Province of Gauteng, indicated by figure ebaHdFe on diagram SG No. 3491/2003) is subject to a servitude of Right of Way in favour of the General Public and which Servitude is indicated by the figures ebjhge and bklnmdfb on diagram SG No. 3491/2003, as will be more fully apparent from Notarial Deed of Servitude No. 864/48-S.

D. The former Remaining Portion of Portion 1 of the Farm Vlakplaats No. 555, Registration Division I.Q., Province of Gauteng (indicated by the figure ABCDEdJKLMNPQRA on diagram SG No. 3491/2003), is subject to Notarial Deed No. 614/1948S whereby in terms of the above-mentioned property, measuring 340,0432 hectares, is subject to a Servitude of Right of Way 15,24 metres wide in favour of Portion 27 (a portion of Portion 5) of the Farm VLAKPLAATS 555, district of Vereeniging, measuring 171,3081 hectares, held under Deed of Transfer No. 29068/1945 dated 22 November 1945. The servitude is represented by figure pdJrqp on diagram SG No. 3491/2003.

And further subject to all such conditions as are mentioned or referred to in the aforementioned Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

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Date: 14th March 2025 **Our Ref: 7490**

LAND SURVEYOR'S CERTIFICATE

PORTION 15 (A PORTION OF PORTION 1) OF THE FARM VLAKPLAATS No. 555-IQ
(SG No. A4541/1925)

I, Hendrik Gerhardus du Preez, registered Professional Land Surveyor, certify that I have scrutinized Deed of Transfer No T68015/2023, together with relevant Surveyor-General Diagrams, and report as follows:

Translated into English from the relevant title deed.

Subject to the following Conditions:

A. The property transferred hereunder is "Subject to the condition that the Government of the Union of South Africa, as owner of a certain portion of a Portion of the said farm measuring 2 morgen, transferred under Deed of Transfer T7045/1908, shall be entitled to a right of access to the said portion from the nearest public road running over the property transferred hereunder and shall have the right of access to water on the said property and the right to use the same where practical for domestic purposes by means of pumps or other implements or by pipes, furrows or otherwise, including all necessary ancillary rights".

   Land Surveyor's Note:

   Title Deed T7045/1908 refers to Portion 2 of the farm Vlakplaats No. 555 – IQ (representing 2 Morgen, or 1,7131ha) . Due to the geographical location of Portion 2, the above mentioned Portion is not affected by this condition in terms of right of access. I cannot comment having access to water though.

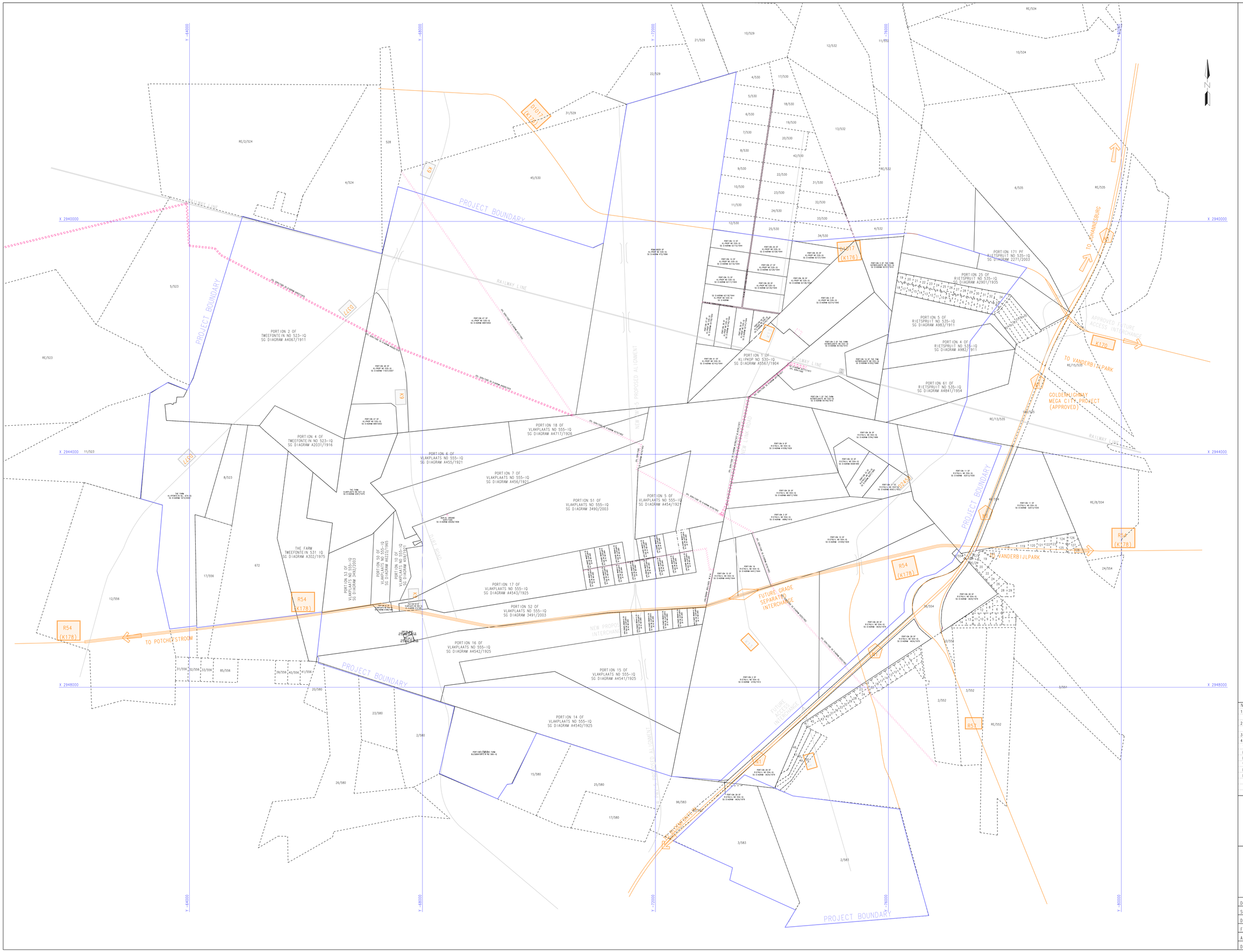
And further subject to all such conditions as are mentioned or referred to in the aforesaid Deed/s.

H G du Preez
Professional Land Surveyor
Registration Number: PLS1073-D

GERHARD DU PREEZ *B.Sc.Survey (PRETORIA) Pr.L(SA)* ***MIKE TRENOR*** *B.Sc.Survey (UCT)Pr.L(SA)*

Consultant: ***HARALD WATTRUS*** *B.Sc.Survey (NATAL) Pr.L(SA)*

ANNEXURE F



Notes:
1. Cadastral information compiled from S-G and GIS data and is subject to final survey.
2. Road and railway infrmation sourced from Project data.
3. Copies of S-G Diagrams available on request.
4. Portions of the Farms:
TWEEFONTEIN 523-IQ
KLIPKOP 530-IQ
RIETKUIL 554-IQ
VLAKPLAATS 555-IQ
BLESBOKFONTEIN 580-IQ
KLIPFONTEIN 674-IQ

VAAL AEROTROPOLIS
CADASTRAL BASE PLAN
various FARMS
November 2024

HL WATTRUS
Inganda Wattrus | Professional Land Surveyors
Professional Land Surveyors
Tel:+27(11)4861274 Cell:+27(0)83325351 e-mail:info@hwls.co.za
www.hwls.co.za

Date:	25/11/2024	Co-ord System:	WG27
Surveyed By:	N/A	Datum:	HBHoek94
Drawn by:	PL	Levels:	N/A
Flown By:	N/A	Paper Size:	A0 (To scale)
Aircraft:	N/A	Scale:	1:20000
Drawing No:	7490-1	Revision:	0

ANNEXURE G

SPECIAL POWER OF ATTORNEY

I Petko Ivanov Atanassov**,** a Director of **POCONAMIX (PROPRIETARY) LIMITED** registration number**: 2017/498408/07,** duly authorized to sign this Special Power of Attorney, do hereby nominate, constitute and appoint **JOHANNES GERRIT BUSSER** (ID No 700512 5061 087) and **JEAN-LUC RAYMOND LIMACHER** (ID No 5901135207185) to be our lawful representative in the following and any other relevant related town planning matters for the development of the Vaal Aerotropolis located on the property descriptions contained in Annexure 1 attached:

- Preparation of a Master Plan for the Vaal Aerotropolis Development located in the Emfuleni Local Municipality of the Sedibeng District Municipality in the Province Gauteng
- Representing the company in any town planning matters, query, commentary or objection in relation to the Vaal Aerotropolis development
- Submitting any town planning applications as required.

in terms of the Emfuleni Local Municipality Spatial Planning and Land Use Management By-Law, 2018 as read with the Emfuleni Land Use Scheme, 2023 and generally for effecting the purpose aforesaid, to do or cause to be done whatsoever shall be required, as fully and effectually, for all intents and purposes, as I/we might or could do if personally present and acting herein – hereby ratifying, allowing and confirming and promising and agreeing to ratify, allow and confirm all and whatsoever my/our representative/agent shall lawfully do, or cause to be done, by virtue of these present. This Power of Attorney includes Power of Substitution and supersedes any previous mandates.

In addition to make any other necessary applications and further to represent me/us at any inquiry in relation to the abovementioned matters and generally to whatever may be necessary or desirable to procure the approval of the application, by virtue of these present and whatever our said representatives have to date done herein.

SIGNED AT Johannesburg ON THIS 13 DAY OF March 2024 in the presence of the undersigned witnesses:

…… 13 March 2024
SIGNED ON BEHALF OF DATE
POCONAMIX (PROPRIETARY) LIMITED

AS WITNESSES:

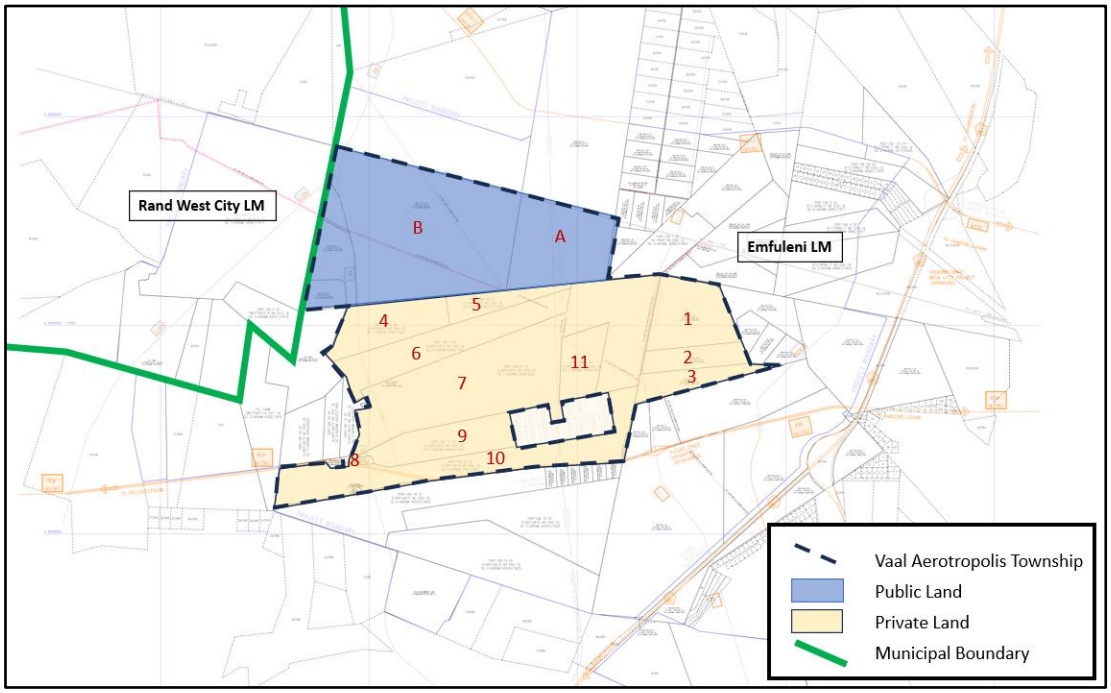
13 March 2024
…… ……
SIGNED DATE
WITNESS 1

13 March 2024
…… ……
SIGNED DATE
WITNESS 2

Annexure 1

List of properties included in Poconamix (Pty) Ltd (now Vaal Aerozone (Pty) Ltd) Power of Attorney for the appointment of JOHANNES GERRIT BUSSER (ID No 700512 5061 087) and JEAN-LUC RAYMOND LIMACHER (ID No 5901135207185) as representative town planners for the Vaal Aerotropolis township establishment application.

KEY	PROPERTY DESCRIPTION	TITLE DEEDS	SG DIAGRAMS	OWNERSHIP	SIZE
A	Part of the Remainder of the Farm Klipkop 530, IQ (Proposed Portion 50 Klipkop 530 IQ)	T46824/2007	Re 472/1896	**RSA**	276,6127
B	Part of Portion 47 Klipkop 530 IQ (Proposed Portion 49 Klipkop 530 IQ)	T5973/2007	Ptn 47 6897/2002 Ptn 48 11937/2007	**RSA**	957,9450
1	Remainder of Portion 9 (a Portion of Portion 3) of the Farm Rietkuil 554 IQ	T68017/2023	A1058/1929	**Vaal Aerozone Pty Ltd** **(Previously Poconamix Pty Ltd)**	189,7478
2	Portion 26 of the Farm Rietkuil 554 IQ		A6671/1956		85,6532
3	Remaining Extent Portion 3 of the Farm Rietkuil 554 IQ		A886/1916		85,6532
4	Remainder of Portion 6 of the Farm Vlakplaats 555 IQ	T68016/2023	A455/1921		85,6532
5	Portion 18 (a portion of portion 6) of the Farm Vlakplaats 555 IQ		A4717/1926		79,6403
6	Portion 7 of the Farm Vlakplaats 555 IQ		A456/1921		255,2465
7	Portion 51 of the Farm Vlakplaats 555 IQ	T68017/2023	3490/2003		801,9251
8	Portion 20 of the Farm Vlakplaats 555 IQ		A13/1940		6,8523
9	Remaining Extent of Portion 17 of the Farm Vlakplaats 555 IQ		A4543/1925		169,2090
10	Portion 52 of the Farm Vlakplaats 555 IQ		3491/2003		374,3061
11	Portion 5 of the Farm Vlakplaats 555 IQ	T68018/2023	A454/1921		101,4648



POCONAMIX (PTY) LIMITED

REGISTRATION NR: 2017/498408/07, VAT NO:: 4220292785.

COMPANY RESOLUTION - #UD/03/01

POCONAMIX (PROPRIETARY) LIMITED

REGISTRATION NUMBER: 2017/498408/07

POCONAMIX (PROPRIETARY) LIMITED authorizes **Johannes Gerrit Busser** (ID No 700512 5061 087) and **Jean-Luc Raymond Limacher** (ID No 5901135207185) to make application to the relevant authorities as may be deemed necessary for the:

- Preparation of a Master Plan for the Vaal Aerotropolis Development located in the Emfuleni Local Municipality of the Sedibeng District Municipality in the Province Gauteng
- Representing the company in any town planning matters, query, commentary or objection in relation to the Vaal Aerotropolis development
- Submitting any town planning applications as required.

J G BUSSER and **JL LIMACHER** in their capacity as Town Planners of the Company is hereby authorised to sign any document on behalf of the Company which may be deemed necessary to give effect to this resolution.

Petko Atanassov in his capacity as Director of the Company is hereby authorised to sign a Power of Attorney on behalf of the Company to give effect to this resolution.

Sincerely,

Petko Atanassov
Date: 13 March 2024

GAUTENG PROVINCE
ECONOMIC DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Enquiries: Vector Phidza
Directorate: HoD's Office
Tel: 082 778 7990

The Vaal Aerotropolis
1st Floor, Building 2
Needwood Office Park, Cnr Cedar Boulevard & Cedar Road
Fourways
2191

To who it may concern

AUTHORIZATION TO PROCEED WITH SUBDIVISION, THE SUBMISSION OF LAND DEVELOPMENT AREA (TOWNSHIP ESTABLISHMENT) APPLICATION, ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND WATER USE LICENSE (APPLICATION IN TERMS OF APPLICABLE LEGISLATION).

1. Consent to Subdivision

I, the undersigned, hereby grant consent to **Vaal Aerozone**, the developer of the **Vaal Aerotropolis Project**, to proceed with the subdivision of the following land:

- A portion of Portion 47; and
- A portion of the Remaining Extent of the Farm Klipkop 530 IQ.

Vaal Aerozone is authorised to engage its appointed town planners and surveyors to carry out the subdivision process. All costs associated with the subdivision shall be borne exclusively by Vaal Aerozone.

2. Consent to Regulatory Applications

Further consent is granted to Vaal Aerozone to initiate and submit the following applications in respect of the aforementioned land portions:

- **Township Establishment Application**
- **Environmental Impact Assessment (EIA)**

- **Water Use License Application (WULA)**

All expenses incurred in connection with these applications shall likewise be the sole responsibility of Vaal Aerozone.

3. Transfer of Ownership

It is expressly acknowledged that, upon the successful completion of the subdivision and transfer processes, the Gauteng Province shall issue a distinct Power of Attorney to formalise the transfer of ownership in favour of the Gauteng Provincial Government. This step is a critical requirement to ensure full compliance with all applicable legal obligations and governance standards governing the project.

4. Conclusion

This consent and authorisation is granted subject to full compliance with statutory requirements, municipal by-laws, and applicable governance frameworks. Vaal Aerozone shall remain solely responsible for all costs and regulatory obligations arising from the subdivision and related applications.

Yours sincerely,

Motlatjo Moholwa
Head of Department: **Economic Development**
Date: 21 August 2026

Prepared by me

CONVEYANCER
FRANCIS BOLLEURS
LPC M97718

POWER OF ATTORNEY

I, the undersigned

VELA ZIMELE MNGWENGWE

in my capacity as
CHIEF DIRECTOR: PROPERTY MANAGEMENT AND ADVISORY SERVICES

of the

NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

duly authorised thereto by virtue of a memorandum approved by the Minister of Land Reform and Rural Development on 21 May 2026.

do hereby nominate, constitute and appoint the

HEAD OF DEPARTMENT in the GAUTENG DEPARTMENT OF ECONOMIC DEVELOPMENT

with the power of substitution, to be the lawful agent and represent the NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

in respect of the powers, functions and activities as set out hereunder regarding the undermentioned properties or part thereof, namely:

BM
KiL

1. REMAINING EXTENT OF THE FARM KLIPKOP NO. 530 REGISTRATION DIVISION I.Q., THE PROVINCE OF GAUTENG

   MEASURING 1031,8770 (ONE THOUSAND AND THIRTY-ONE COMMA EIGHT SEVEN SEVEN ZERO) HECTARES

   HELD BY DEED OF TRANSFER T46824/2007

2. PORTION 47 OF THE FARM KLIPKOP NO. 530 REGISTRATION DIVISION I.Q., THE PROVINCE OF GAUTENG

   MEASURING 1365,8921 (ONE THOUSAND THREE HUNDRED AND SIXTY-FIVE COMMA EIGHT NINE TWO ONE) HECTARES

   HELD BY DEED OF TRANSFER T5973/2007

POWERS, FUNCTIONS AND ACTIVITIES

A. Make all such necessary application(s) for obtaining any environmental authorisation that is required, and/ or for Water Use License applications which may in future be required for the purpose of the **Vaal Aerotropolis** development.

B. Make all such necessary application(s) to the local authority and any other municipal, provincial and national departments or any State-owned Company or Public Entity that is required or may in future be required from a town planning, environmental, legal and conveyancing perspective.

C. Take all such necessary steps that may be necessary for the establishment of a township, or any Rezoning, Consent Use, and the Removal of Restrictive Title Conditions, including such ancillary steps that are necessary in terms of any pre-proclamation conditions, proclamation notices, appropriate legislation or by-laws relating to any of the aforesaid

BM
K.L

properties or any of the conditions of title in respect of the title deeds of the aforesaid properties.

D. Make application for the establishment or an extension of boundaries of a Special Economic Zone on the properties in terms of the Special Economic Zones Act No. 16 of 2014.

E. Make application for the rezoning, subdivision, consolidation and all other township establishment actions required to give effect to the Vaal Aerotropolis Master Plan.

F. Survey, frame and obtain approval and/or cancellation of any diagrams by the Surveyor-General to give effect to the Vaal Aerotropolis Master Plan, in accordance with **Annexure A** and **B**.

G. Attend to the compliance with any conditions of establishment imposed in the process of the township establishment of the abovementioned properties.

H. Attending to the amendment, removal or cancellation of any title deed condition which is contrary to township establishment or the envisaged Vaal Aerotropolis Master Plan as depicted in **Annexure C**.

I. Make application for and attend to the replacement of any misplaced title as contemplated in Regulation 68(1) of the Deeds Registries Act, No. 47 of 1937.

J. Make application for and attend to the opening of township registers as contemplated in Section 46(1) of the Deeds Registries Act, No. 47 of 1937, in respect of the yet to be subdivided portions of the abovementioned properties in terms of the Vaal Aerotropolis Master Plan.

K. Attend to the registration, amendment of or cancellation of any right, servitude or title condition and modification or termination of any such right, servitude or title condition for the purpose of opening of the township register/s, including any rights created or cancelled in terms of wayleaves and permits.

BM
K.L

L. Appoint Town Planners, Land Surveyors, Notaries, Conveyancers, Attorneys, Engineers, Environmentalist, Architects and such other professional person as may be necessary to give effect to all the powers aforesaid.

M. Sign any documentation or do anything, which may be necessary in the exercise of the authority granted under this Special Power of Attorney.

This Special Power of Attorney shall remain valid for a period of 2 (two) years from the date of signature hereof unless extended at my discretion.

Thus, done and signed at RB TORA on this 6th day of JULY 2026.

AS WITNESSES:

NAME: Belinah Sibiya

1. _____

NAME: Keabone Lorraine Molepo

_____

VELA ZIMELE MNGWENGWE

2. _____

Provincial Shared Services Centre: Gauteng; Suncardia Building, Cnr Stanza Bopape & Steve Biko Streets, Arcardia. Private Bag X9, Hatfield, 0028; Tel: 012 337 3600;

Mr Motlatjo Moholwa
Head of Department
Gauteng Department of Economic Development
Private Bag X091
Marshalltown
2107

By email: Vector.Phiza@gauteng.gov.za

Dear Head of Department

REQUEST FOR THE MINISTER TO DONATE A PORTION OF PORTION 47 OF THE FARM KLIPKOP 530 IQ, MEASURING 957 HECTARES IN EXTENT AND A PORTION OF THE REMAINING EXTENT OF THE FARM KLIPKOP 530 IQ, MEASURING 276 HECTARES IN EXTENT TO GAUTENG PROVINCIAL GOVERNMENT.

The above-matter refers.

1. This letter serves to inform you that your application for the donation of a Portion of Portion 47 and a Portion of the Remaining Extent of the farm Klipkop 530 IQ to Gauteng Provincial Government, has been duly approved by the Minister of Land Reform and Rural Development.

2. It is hereby brought to your attention that the approval is subject to the following conditions:

    a. The applicant (Gauteng Provincial Government) be responsible for the subdivision of the subject properties.

b. The Applicant shall commit to resettlement obligations for farm dwellers and lessee on both properties; and

c. The applicant shall be responsible for all costs in relation to the transfer of the subject properties and other transactional costs.

3. Further note that a Special Power of Attorney for Township Establishment and Environmental Impact Assessment applications will be issued in due course.

4. You are requested to note that the approval must still be processed by the Department as a result of which this office will remain in contact with your office in order to inform you of the further role that you are required to play in the process.

5. The Department wishes to extend its best wishes to you in obtaining the approval for the donation, as this process is the culmination of a transformative regional development initiative that aligns with the Gauteng Provincial Government's Growing Gauteng Together 2030 Strategy.

6. Should you require any further information, please contact the Director: Property Management, Mr Zakhele Mhlambo on 0798783011 or Zakhele.Mhlambo@dlrrd.gov.za.

Kind Regards,

MR. Z MHLAMBO

DIRECTOR: PROPERTY MANAGEMENT

DATE: 08 JUNE 2026

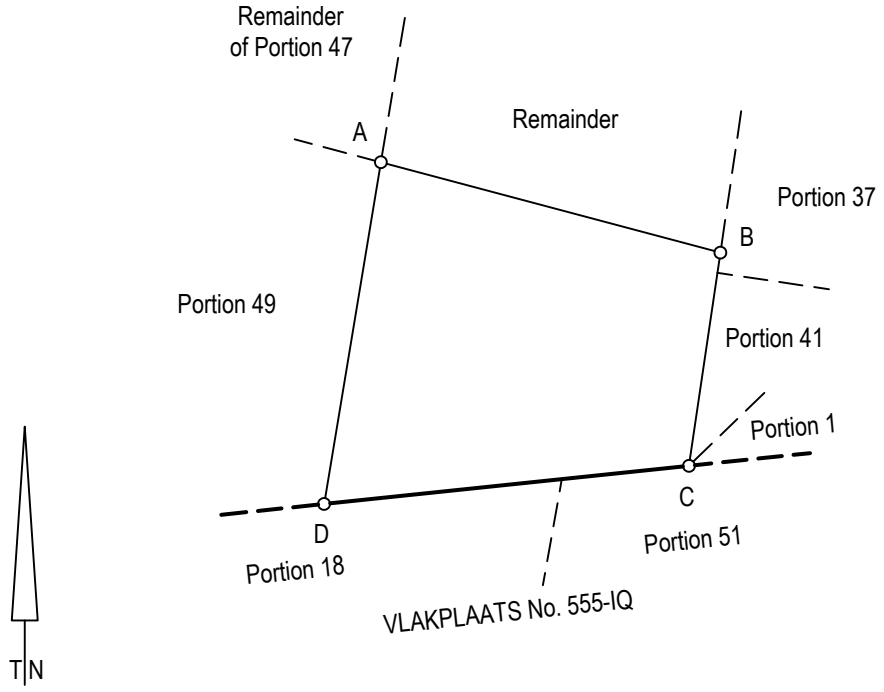
ANNEXURE H

SUBDIVISIONAL DIAGRAM

HARALD WATTRUS & ASSOCIATES, PROFESSIONAL LAND SURVEYORS, JHB (011 486-1274)

SIDES Metres		ANGLES OF DIRECTION	CO-ORDINATES Y System: WG 27° X			S.G. No.
		Constants:		+ 0,00	+ 2 900 000,00	
AB	1858,70	284 54 23	A	- 70 918,63	+ 41 511,43	Approved
BC	1139,66	8 23 50	B	- 72 714,78	+ 41 989,56	
CD	1940,31	84 01 24	C	- 72 548,34	+ 43 117,00	
DA	1832,34	189 25 29	D	- 70 618,58	+ 43 319,03	
TRIGONOMETRICAL BEACONS						for SURVEYOR-GENERAL
VER 91 (397)			△	- 67 755,69	+ 42 622,00	
TWEEFONTEIN II (76)			△	- 65 577,56	+ 40 421,09	

Beacon Descriptions
A,B ..... 16mm Iron peg
C ..... Round fence post
D ..... Monolith



Scale 1 : 40000

The figure A B C D A
represents 276,6127 Hectares of land being

PORTION 50 OF THE FARM KLIPKOP No. 530-IQ

Province of Gauteng
Compiled in July 2026 by me

H.G. du Preez PLS1073
Professional Land Surveyor

This diagram is annexed to No.	The original diagram is	File
d.d.	S.G. No. 472/1896	S.R.
i.f.o.	Transfer No.	Comp. IQSD-32,34, IQSJ-12
North Gauteng Deeds Registry		T.P.

7490-Ptn50

SUBDIVISIONAL DIAGRAM

SIDES Metres		ANGLES OF DIRECTION	CO-ORDINATES Y System: WG 27° X		
		Constants:		+ 0,00	+ 2 900 000,00
AB	3735,26	284 54 23	A	- 67 309,07	+ 40 550,57
BC	1832,34	9 25 29	B	- 70 918,63	+ 41 511,43
CD	3985,70	84 01 55	C	- 70 618,58	+ 43 319,03
DE	3249,06	191 37 17	D	- 66 654,48	+ 43 733,43
EA	0,41	193 09 40	E	- 67 308,98	+ 40 550,97
TRIGONOMETRICAL BEACONS					
TWEEFONTEIN II (76)			△	- 65 577,56	+ 40 421,09
VER 91 (397)			△	- 67 755,69	+ 42 622,00

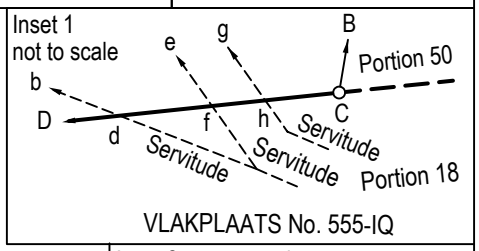
S.G. No.

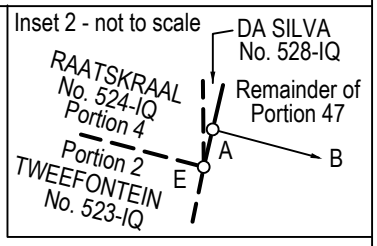
Approved

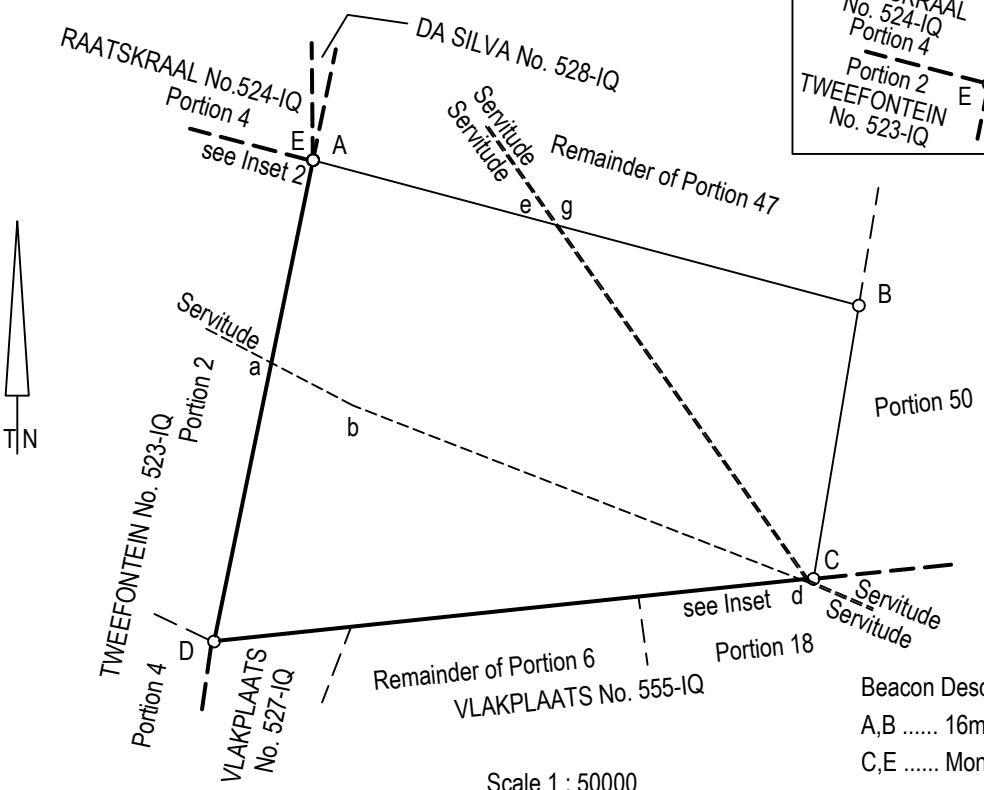
for SURVEYOR-GENERAL

Servitude Notes:

1. The line a b d represents the centre line of an electric power line with underground cables vide Diagram S.G. No A4928/1970, Deed No. 396/1971s.
2. The lines e f and g h represent the centre lines of overhead electric power lines with underground cables vide Diagram S.G. No A227/1952, Deed No.







Beacon Descriptions
A,B ..... 16mm Iron peg
C,E ..... Monolith
D ..... Flat iron fence post

Scale 1 : 50000

The figure A B C D E A represents 957,9450 Hectares of land being

PORTION 49 (A PORTION OF PORTION 47)
OF THE FARM KLIPKOP No. 530-IQ

Province of Gauteng
Compiled in July 2026 by me

H.G. du Preez PLS1073
Professional Land Surveyor

This diagram is annexed to No.	The original diagram is	File
d.d.	S.G. No. 6879/2002	S.R.
i.f.o.	Transfer No. T9521/2004	Comp. IQSD-34, IQSJ-12
North Gauteng Deeds Registry		T.P.

HARALD WATTRUS & ASSOCIATES, PROFESSIONAL LAND SURVEYORS, JHB (011 486-1274)

7490-Ptn49

ANNEXURE I

60 YEAR MASTERPLAN

HERITAGE & SENSITIVITY DRAWING

SCALE 1 : 15000 @A0

2025-04-08

VAAL AEROZONE

LEGEND

- AEROTROPOLIS OWNED LAND 4004Ha
- RSA — LAND UNDER 99 YEAR LEASE HOLD 1227Ha
- TOTAL VAAL AEROTROPOLIS 5 231Ha
- PRIVATELY OWNED LAND 2 653Ha
- RSA — RSA OWNED LAND 3 333Ha
- TOTAL — PROPOSED SEZ 11 217Ha

VAD Pty (Ltd) · M-Kona Consulting Engineers · URBAN DYNAMICS · wsp · dbm architects | jhb

R.S.A

AGRI-ZONE NORTH

RSA OWNED LAND 1144Ha
Remainder of the Farm
Klipkop No. 530 IQ

RAILWAY LINE

RAILWAY HUB

AEROTROPOLIS OWNED LAND 1226Ha

TWEEFONTEIN PRIVATE NATURE RESERVE

RSA OWNED LAND UNDER LEASE 1227Ha

RSA OWNED LAND 98Ha

FUTURE PWV-5 ALIGNMENT

NEW LINK ROAD

PROPOSED LINK ROAD

BRIDGE

AEROTROPOLIS OWNED LAND 1770Ha

AEROTROPOLIS OWNED LAND 356Ha

STAFF VILLAGES

AEROTROPOLIS OWNED LAND 151Ha

AEROTROPOLIS OWNED LAND 336Ha

POCONAMIX OWNED LAND 163Ha

RSA OWNED LAND 634Ha

RSA OWNED LAND 1457Ha

PROPOSED GRADE SEPARATED INTERCHANGE

PROPOSED ACCESS INTERCHANGE

PROPOSED RECURVED INTERCHANGE

K175 · K16 · K170 · N1 · R54 (K178) · R54 · R57 · K13 FUTURE

TO VANDERBIJLPARK

TO POTCHEFSTROOM

TO LINDEQUESDRIFT

TO BLOEMFONTEIN

Kammaland AH

GOLDENHIGHWAY MEGA CITY PROJECT (APPROVED)

AMSA SOLAR

VAAL S.E.Z

ANNEXURE J

PRISM EMS AFRICA

VAAL AEROTROPOLIS

ENVIRONMENTAL SCOPING REPORT

Proposed Development of an Aerotropolis on Part of Portion 47, and Part of the Remainder of the farm Klipkop 530 IQ; Re/3, Re/9 and Portion 26 of the farm Rietkuil 554 IQ; and Portions 5, Re/6, 7, Re/17, 18 (Ptn of Ptn 6), 20, 51 and 52 of the farm Vlakplaats 555 IQ, situated in the Emfuleni Local Municipality, Gauteng

30 September 2026

VAAL AEROTROPOLIS

Catalysing Economic Transformation in the Sedibeng District

Vaal Aerozone (Pty) Ltd stands at the forefront of driving the Vaal Aerotropolis — a transformative development in the Sedibeng District within the Emfuleni Local Municipality area, positioning the region as a dynamic gateway to global markets.

Featuring world-class infrastructure — including an international airport, airport city, agri-zone, livestock export air platform, trade and commercial zones, and advanced logistics facilities — the Vaal Aerotropolis will represent a strategic investment in revitalising Emfuleni and fostering sustainable regional growth.

As the coordinating force behind this catalytic project within the proposed Vaal Special Economic Zone (SEZ), Vaal Aerozone will bring together expertise, capital, and collaboration to unlock the full potential of the Vaal Aerotropolis and drive long-term economic value for the region.

Proponent:
Vaal Aerozone (Pty) Ltd
Project Reference:
22349 - Vaal Aerotropolis
GDEnv Reference:
GAUT 002/25-26/E0240
Report Date:
30 September 2026
Report Reference:
22349_SR_1

PRISM EMS AFRICA

DOCUMENT CONTROL

Project Name	Vaal Aerotropolis
Report Title	Scoping Report
Authority Reference Number	GAUT 002/25-26/E0240
Report Status	For Comment

Applicant Name	**Vaal Aerozone (Pty) Ltd**

	Name	Signature	Date
Document Compilation	**Mr. D. Botha** (M.A. Env.Man.) (PHED) Wetland Specialist | Reg. EAP | Pr.Sci.Nat. **Ms. A. Bartmann** (BSocSci. Hons. Geo.&Env. Sci) Cand. EAP | EAPASA		2024/08 – 2026/09
Document Review	**Mr. D. Botha** (M.A. Env.Man.) (PHED) Wetland Specialist | Reg. EAP | Pr.Sci.Nat. **Ms. E. Bester** (MSc Environmental Sciences) | Pr.Sci.Nat | Reg.EAP		2024/08 – 2026/09 2025/11 – 2026/09
Document Signoff	**Mr. D. Botha** (M.A. Env.Man.) (PHED) Wetland Specialist | Reg. EAP | Pr.Sci.Nat.		2026/09

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Amendments to Document

Date	Report Reference Number		Description of Amendment

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The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken. PRISM EMS Africa (Pty) Ltd and its staff reserve the right to modify aspects of the report, including the recommendations, when new information becomes available from ongoing research or further work in this field or pertaining to this investigation.

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Please note that maps and/or drawings included in this report are to provide context only and A3 copies are included in the appendices.

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- The results of the project;
- The technology described in any report;
- Recommendations delivered to the client.

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LIST OF ABBREVIATIONS

ATC	Air Traffic Control
ATMs	Air Traffic Movements
AEP	Aviation Environmental Protection
BA	Basic Assessment
BBBEEE	Broad-Based Black Economic Empowerment
BID	Background Information Document
BCEA	Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997)
BPEO	Best Practicable Environmental Option
CAPEX	Capital Expenditure
CBA	Critical Biodiversity Areas
C & D	Construction and Demolition waste
CAR's	Civil and Aviation Regulations
C-Plan	Conservation Plan
CO2	Carbon dioxide
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and Environment
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioner Association of South Africa
ECO	Environmental Control Officer
EGDS	Economic Growth and Development Strategy
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EMZs	Environmental Management Zones
ESA	Ecological Support Area
GA	General Authorisation
GAPA	Gauteng Agricultural Potential Atlas IV
GDEnv	Gauteng Department of the Environment
GDP	Gross Domestic Product
GDRT	Gauteng Department of Roads and Transport
GGT	Grow Gauteng Together 2023
GIS	Geographical Information System
GPEMF	Gauteng Provincial Environmental Management Framework
GPS	Global Positioning System

GN	Government Notice
GSE	Ground Support Equipment
GSDF	Gauteng Spatial Development Framework
Ha	Hectare
HIA	Heritage Impact Assessment
IASASA	International Association for Impact Assessment (South Africa)
I&AP	Interested and Affected Party
IATA	International Air Transport Association
IBAs	Important Bird and Biodiversity Areas
ICAO	International Civil Aviation Organization
ICW	International Catering Waste
IDP	Integrated Development Plan
IEM	Integrated Guideline Series
IWMP	Integrated Waste Management Plan
kV	Kilovolt
kVA	Kilovolt-amps
LSDF	Local Spatial Development Framework
m.a.s.l	meters above sea level
MVA	Mega Volt-Amperes
MSCP	Multi Story Car Parks
mppa	million passengers per annum
MRO	Maintenance, Repair and Overhaul
MSW	Municipal Solid Waste
N/A	Not applicable
NADP	National Airports Development Plan
NATMAP	National Transport Master Plan
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM:PA	National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resource Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1999 (Act 36 of 1998)
NWM6	National Wetland Map v6
NMD	Notified Maximum Demand
NPAES	National Protected Area Expansion Strategy
NCAP	National Civil Aviation Policy
NTP	National Transport Policy
OHSA	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

ONA	Other Natural Areas
OPEX	Operating Expenditure
PA	Protected Areas
PDF	Portable Document Format
PHRA-G	Provincial Heritage Resources Agency of Gauteng
PIA	Palaeontological Impact Assessment
POPI	Protection of Personal Information
PPP	Public Participation Process
Prism EMS	Prism Environmental Management Services
RESA	Runway End Safety Areas
RFFS	Airport Rescue and Fire-fighting Services
RPAS	Remote Piloted Aircraft Systems
SACAA	South African Civil Aviation Authority
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Authority
SAHRIS	South African Heritage Resources Information System
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency State-Owned Company Limited
SAPAD	South African Protected Areas Database
SANS	South African National Standards
SDI	Split Diamond Interchange
SDF	Spatial Development Framework
SDP	Site Development Plan
SEZ	Special Economic Zone
S&EIR	Scoping & Environmental Impact Report
SMMEs	Small, Medium and Micro Enterprises
SPLUMA	Spatial Planning and Land Use Management Act
SWMP	Stormwater Management Plan
TIA	Traffic Impact Assessment
V	Volt
VA	Vaal Aerotropolis
WMA	Water Management Area
WULA	Water Use License Application
WWTW	Wastewater Treatment Works
WTW	Water Treatment Works

1. INTRODUCTION

Vaal Aerozone (Pty) Ltd intents to develop and manage the Vaal Aerotropolis, planned for an area ± 10km west of the N1 and Vanderbijlpark in the Sedibeng district located within the Emfuleni Local Municipality, Gauteng Province. An Aerotropolis is defined as a metropolitan sub-region whose infrastructure, land use and economy are centred on and around an airport. This development, which will be known as the Vaal Aerotropolis, aims to serve as a key freight and logistics hub, featuring a two-terminal design and integrated air cargo services containing state-of-the-art facilities and infrastructure.

The proposed Vaal Aerotropolis represents a strategic development planned within the jurisdiction of the Emfuleni Local Municipality (ELM) and the Sedibeng District Municipality, aimed at establishing a major economic, aviation, logistics and agricultural development node within the southern Gauteng region. The development is intended to support economic diversification, stimulate investment, facilitate employment creation and strengthen the local and regional economic base.

A key strategic objective of the Aerotropolis is to improve access to economic opportunities for communities within Emfuleni and the broader southern Gauteng region. By establishing a significant concentration of aviation, logistics, agricultural, commercial and industrial activities within the area, the development has the potential to reduce the spatial separation between residential communities and employment opportunities and, consequently, reduce dependence on long-distance commuting to other economic centres within Gauteng.

The Vaal Aerotropolis is envisaged as an integrated, large-scale development comprising, *inter alia*, an International Airport, Logistics Hub and Agricultural Hub. These primary components are intended to function as interconnected economic drivers, supported by the necessary transport, bulk infrastructure, commercial and social-supporting facilities. The International Airport is expected to provide the principal aviation and connectivity function of the Aerotropolis and to serve as a catalyst for the establishment of airport-related economic activities.

The planned Vaal Aerotropolis will be developed in three (3) phases over a period of 60 years, to include a Cargo Terminal, Airport City, Solar Farm, Agri Zone and Trade Zone (Figure 1-1). Each phase is designed to progressively expand the airport's capacity and functionality to accommodate increasing demand. Vaal Aerozone (Pty) Ltd will develop, operate and manage the Vaal International Airport to potentially be included in the Vaal Special Economic Zone (SEZ), as envisioned by the Sedibeng District Municipality SDF, 2025.

Phase 1 (subject of this application) will establish the core infrastructure and catalytic components of the project. The earmarked approximately 3 544 hectares will be divided into 29 erven zoned for '"Aerodrome", "Business 1", "Public services / utilities", an "Agricultural" for the purpose of the Agri-Zone, "Private open space" and "Private Street". Economically, Phase 1 is projected to generate R82.18 billion in business sales and R36.07 billion in Gross Domestic Product (GDP) during construction, creating approximately 118 498 jobs, and once operational, it will add R19.68billion in annual business sales, R9.28 billion to GDP, and

sustain nearly 19,838 jobs. Infrastructure related to this phase includes, but is not limited to, development as indicated in the table below.

TABLE 1-1: INFRASTRUCTURE PLANNED FOR PHASE 1 OF THE PROPOSED DEVELOPMENT

Type	Infrastructure Components
Airport Precinct	• A 4.2 km runway designed for International Civil Aviation Organization (ICAO) Code F aircraft • Two rapid-exit taxiways • A passenger terminal with a capacity of 7.2 million passengers per annum • A cargo terminal capable of handling 150 000 tons of freight annually
Airport City	• 90-room hotel • Premium office space • Medical consulting rooms • 4-star rated Green Environment with pedestrian friendly tree-lined boulevards
Agri-Zone	• Climate controlled greenhouses including hydroponic farm • Live animal holding platform for transport by air • Tissue culture facility • Agricultural export facilities including perishable supply chain and packhouses
Trade Zone	• Integration between air, rail ports, factories and motorways • Airside freight orientated export environment of ± 26 Ha • Manufacturing area of ± 72 000 m² • Warehousing and distribution area of ± 72 000 m² • Offices of ± 16 000 m²
Additional Infrastructure	• Access points from the P24 (R54) • Parking apron for local and international aircraft • Aircraft maintenance hangar • Car parking areas for short-stay, long-stay, car rental and staff • Fuel storage facility • Water supply infrastructure • Wastewater treatment works • Stormwater infrastructure • Electrical supply • Waste collection points

Phase 2 (expected to commence in 2048) will be triggered when passenger demand reaches approximately 25 million per annum. This phase will involve i) expanding the passenger terminal and cargo facilities, ii) introducing additional trade and logistics zones, and iii) increasing warehousing and manufacturing capacity.

Infrastructure upgrades will also include additional passenger aircraft stands, a multi-story short-stay parking structure, a second interchange on the N1, the upgrade of Roads K13 and K178 to dual carriageways, and expanded wastewater and power infrastructure. Phase 2 will strengthen logistics and industrial clusters, attract foreign investment, and deepen integration with the Vaal SEZ.

Phase 3 (expected to commence in 2068) is considered to be the ultimate development stage. It will accommodate a passenger capacity of 45 million per annum and 872,000 tons of cargo annually. It will include the addition of i) a mirror terminal, ii) a second runway, iii) two rapid-exit taxiways, iv) full build-out of the Airport City to include premium offices, retail, hospitality and healthcare facilities, v) expanded Agri-Zones, and vi) Solar Farms.

Advanced multimodal connectivity will also be introduced, including road, rail, and air freight hubs. Infrastructure will be fully upgraded to integrate with regional networks such as the PWV5 road link, and electrical capacity will be expanded with renewable energy integration. This phase will transform Emfuleni / Rand West City Local Municipalities into global trade gateways and a logistics hub for Southern Africa.

In summary, while the Vaal Aerotropolis is a long-term, multi-phase development, **this application specifically seeks approval for Phase 1 (excluding the Solar Farm)**, which will serve as the foundation for future growth and deliver immediate economic-, social-, and infrastructural benefits to the region. Subsequent applications will be lodged for the required environmental authorisations as the phases and related services progress, subject to the Legislation relevant at the time of application.

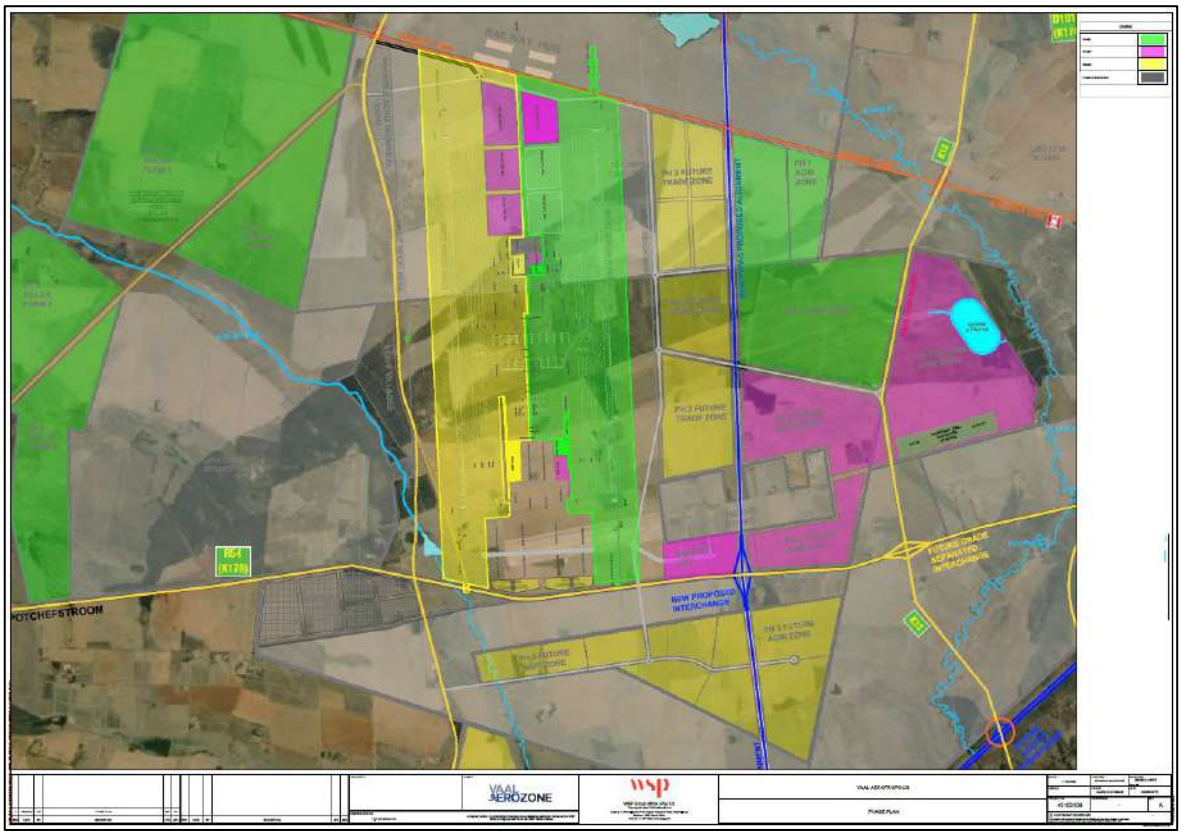


FIGURE 1-1: PROPOSED DEVELOPMENT PLAN FOR VAAL AEROROPOLIS (3 PHASES)

FIGURE 1-2: PHASE 1 DEVELOPMENT PLAN (GREEN)

FIGURE 1-3: PHASE 2 DEVELOPMENT PLAN (PURPLE)

FIGURE 1-4: PHASE 3 DEVELOPMENT PLAN (ORANGE)

Current planning places the total proposed development boundary (all 3 phases) at approximately 11 400 hectares, the majority of which presently constitutes productive or potentially productive agricultural land within the Sedibeng District.

The conversion of this land to airport, industrial, logistics and mixed-use development represents a permanent and, for practical purposes, irreversible change in land use and land capability. This is recognised as a significant impact, both in terms of direct loss of production and potential cumulative regional effects when considered alongside related developments.

However, as is evident from the Development Plans illustrated in Figure 1-1 to Figure 1-4 above, the proposed Vaal Aerotropolis development incorporates an **extensive Agri-Zone**, as an integral component of the Aerotropolis development – from the first Phase of development. The Agri-Zone will be focused on production of high-value agricultural products amenable for transport by air, and planning is for export of these products to the rest of the world, via the cargo terminal.

The proposed Agri-Zone is envisaged as a high-technology agricultural cluster, incorporating climate-controlled growing facilities, including greenhouses and hydroponic production systems, and is anticipated to become one of the largest climate-controlled agricultural production areas in Africa. An integrated perishable supply chain is proposed, incorporating associated logistics and storage infrastructure. The development proposal further provides for a state-of-the-art tissue culture facility and a dedicated live-animal holding facility, intended to facilitate the transportation of live animals by air.

The Agri-Zone is therefore envisioned to form a significant component of the Aerotropolis' agricultural and economic development strategy. The programme is anticipated to support up to 300,000 small-scale

producers and facilitate approximately 145,000 new employment opportunities over the next five years, subject to the successful implementation of the proposed development.

From an agricultural impact perspective, the incorporation of the Agri-Zone provides important mitigation in relation to the potential loss or transformation of existing agricultural land associated with the Aerotropolis. The Agri-Zone will be discussed in more detail, under Section 4.1.3.

PRISM EMS Africa (Pty) Ltd (Prism EMS Africa) has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the environmental authorisation process for **Phase 1** of the proposed Vaal Aerotropolis, as required by a host of environmental legislation. This application does however NOT include application for the solar PV facility, planned to form part of Phase 1 of the development.

1.1 ENVIRONMENTAL AUTHORISATION

"Environmental Authorisation" (EA) refers to an authorisation granted by the competent authority of a listed activity in terms of Section 24 of the National Environmental Management Amendment Act (Act No. 107 of 1998) [NEMA]. As activities under Listing Notice 1, 2 and 3 of the 2014 Environmental Impact Assessment (EIA) Regulations (as amended) are triggered (Section 4.2 below), a Scoping and EIA process is being conducted. The S&EIR process being followed is detailed in **Figure 1-5** below.

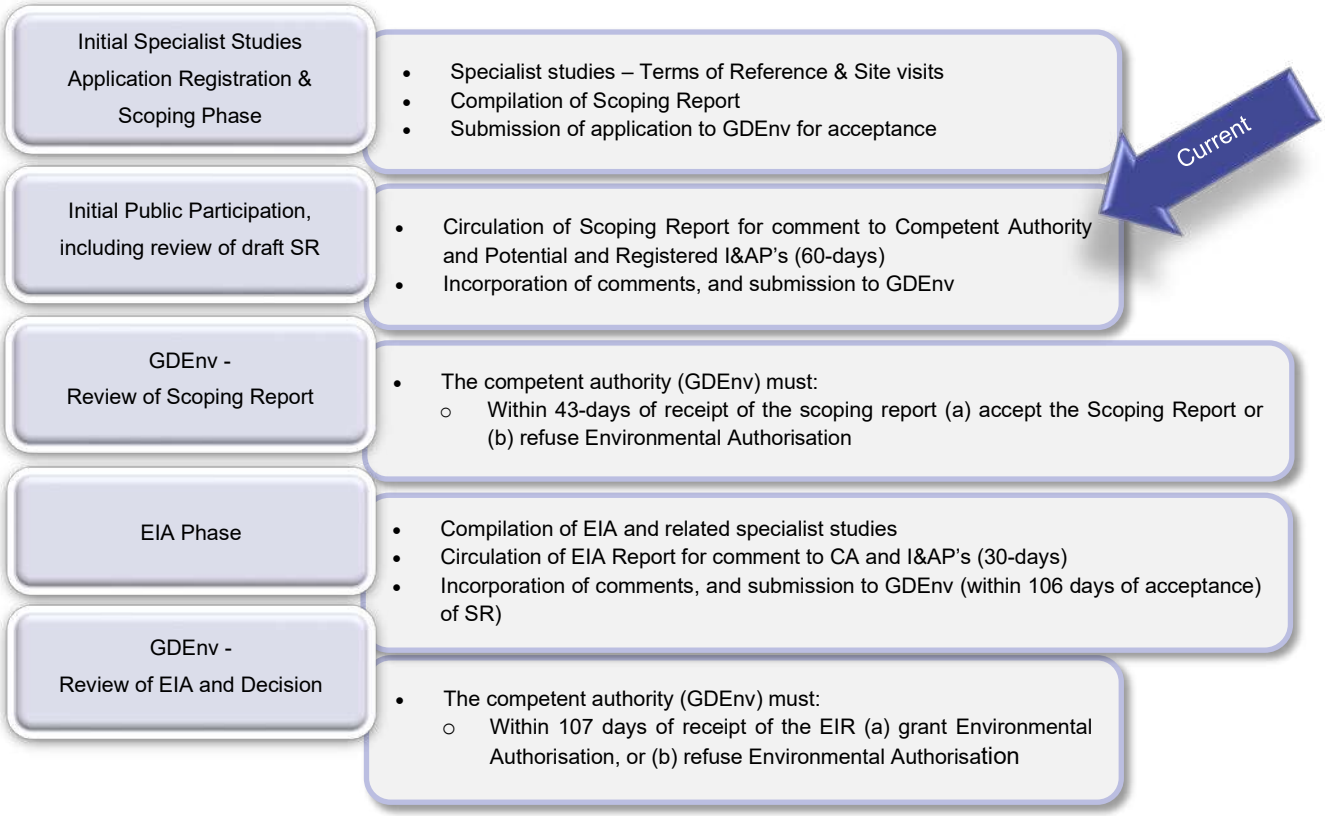


FIGURE 1-5: ENVIRONMENTAL AUTHORISATION PROCESS

An application for an EA has been registered with the Gauteng Department Environment (GDEnv) and is currently in the initial stage of consultation. The Scoping Report will be made available to commenting authorities and potential and registered Interested and Affected Parties (I&APs) to enable their review and comment on the project and proposed development.

The reference number for the EA application is **GDEnv Ref No: GAUT 002/25-26/E0240.**

1.2 PROCESS TO DATE

1.2.1 APPLICATION

An application for the EA has been registered with the GDEnv. The reference number provided for the Application is: **GAUT 002/25-26/E0240.** The application will be formally advertised, and circulation of the Scoping and EIA Report will form part of the application process.

A Water Use License Application (WULA) has been registered with the Department of Water and Sanitation (DWS) on their online application system. The reference number provided for the Application is **WU40964**.

1.2.2 PUBLIC PARTICIPATION

1.2.2.1 INITIAL STAKEHOLDER ENGAGEMENT

An initial stakeholder engagement process was undertaken in 2024 to inform affected landowners of the proposed development of the Vaal Aerotropolis. Notification letters were sent to all occupants of the study area to inform them of the proposed development's anticipated activities and specialist studies to be undertaken. This allowed for the onset of the I&AP database that will continuously be updated throughout the application process.

1.2.2.2 FORMAL PUBLIC PARTICIPATION

A formal Public Participation Process (PPP) will be undertaken in terms of the EIA Regulations, 2014 (as amended). The Public Participation Process will be inclusive of:

- A potential I&AP database has been compiled and includes adjacent / affected landowners, Ward Councillors, Authorities and Potential I&APs. This database will be continuously updated as the PPP proceeds and as registration requests and associated comments are addressed.
- Communication with authorities were initiated to i) commence / discuss application procedures, ii) acquire reference numbers, and iii) confirm whether submissions should be in hard and/or electronic format.
- Newspaper adverts were placed in the Vaalster (Afrikaans) and Sedibeng Star (English) on 29 September 2026, and in the Rand West Advertiser (English and Sesotho) on 1 October 2026. The adverts include the dates associated with the registration period as well as review periods for the Scoping Report and WULA Summary Report.
- Several site notices, showing a locality map of the proposed development, were placed on and around the site on 29 September 2026. The site notices also include the dates associated with the registration period as well as review periods for the Scoping Report and WULA Summary Report.
- A Background Information Document (BID) was compiled and includes more in-depth information on the proposed development. The BID clearly explains details associated with the 60-day public participation period as well as the review period for the Scoping Report and WULA Summary Report which will be available from 01 October 2026 to 02 December 2026. The BIDs were emailed,

hand delivered or messaged to adjacent landowners/tenants, affected landowners/tenants, potential I&APs and commenting authorities on 30 September 2026.

- A Public Open Day will be arranged during the EIA phase of the assessment.
- A Comments and Responses register has been opened and all requests to register and/or comments received will be included and continuously updated.
- All information / proof / requests pertaining to the above-mentioned will be included in the final Scoping Report as well as the EIA phase of the S&EIR process.

1.2.2.3 REVIEW OF SCOPING REPORT AND WATER USE LICENSE APPLICATION SUMMARY REPORT

In addition to the above, notification to the public in respect of review periods for the Scoping Report (*this document*) and WULA Summary Report has been undertaken as follows:

- The documents were uploaded to Prism EMS Africa's website: www.prismems.co.za
- Emails and/or messages were sent to all the potential and registered I&APs to notify them of the 60-day review period on 30 September 2026.
- As applicable, electronic copies (e.g., USB flash drive or PDF uploads) were submitted to competent and commenting authorities including GDEnv, Emfuleni Local Municipality, Rand West City Local Municipality, Sedibeng District Municipality, West Rand District Municipality, South African Heritage Resources Agency (SAHRA), the Provincial Heritage Resources Agency of Gauteng (PHRA-G), South African Civil Aviation Authority (SACAA), GDARD and DWS on 30 September 2026.

A 60-day review period has been provided to facilitate the review of the Scoping Report and comment there on by registered I&APs and competent / commenting authorities alike. All comments received and responses provided during the public review period will be captured in the Comments and Responses Report and submitted as part of the finalised Scoping Report to GDEnv, and WULA Phase 3 submission to DWS, to enable informed assessment of the submissions.

1.3 REPORT OUTLINE

The format of the Scoping Report has been aligned with the requirements contained in Appendix 2 of the EIA Regulations, 2014 (as amended) promulgated under the NEMA (Act No. 107 of 1998), as amended. The required report contents and how it is structured in this report is indicated in **Table 1-2** below.

TABLE 1-2: REQUIRED CONTENTS OF THE SCOPING REPORT

Appendix 2 of the EIA Regulations, 2014	Reference in Report
2(1)(a) Details of the: (i) EAP who prepared the report; and (ii) Expertise including CV	 Section 1.4 Appendix A
2(1)(b) Location of the activity including: (i) 21-digit SG code of each parcel (ii) Physical address of farm (iii) Co-ordinates of property boundary	Section 1.7

Appendix 2 of the EIA Regulations, 2014	Reference in Report
2(1)(c) Plan locating the proposed activity or activities applied for at an appropriate scale, or, it is - (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken	Section 1.7 Figure 1-2
2(1)(d) A description of the scope of the proposed activity, including - (i) all listed and specified activities triggered (ii) A description of the activities to be undertaken including associated structures and infrastructure.	Section 1.7 Section 4.1 Section 4.2 Section 6.1
2(1)(e) A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process	Section 2
2(1)(f) A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location	Section 5
2(1)(h) A full description of the process followed to reach the preferred activity, site and location of the development footprint within the site, including -	
(i) Details of the Alternatives considered	Section 6.2
(ii) Details of the Public participation process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs	Section 7
(iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them	Section 7.3 & Appendix D (*to follow*)
(iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	Section 3
(v) The impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources; and can be avoided, managed or mitigated.	Section 8.5
(vi) The methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives	Section 8.3
(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	Section 8.1
(viii) The possible mitigation measures that could be applied and level of residual risk.	Section 8.4
(ix) Outcome of the site selection matrix	Section 6 Section 6

Appendix 2 of the EIA Regulations, 2014	Reference in Report
(x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such (xi) Concluding statement indicating the preferred alternatives, including preferred location of the activity	Section 6
2(1)(i) A plan of study for undertaking the environmental impact assessment process to be undertaken, including (i) A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity (ii) A description of the aspects to be assessed as part of the environmental impact assessment process (iii) Aspects to be assessed by specialists (iv) A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists (v) A description of the proposed method of assessing duration and significance (vi) An indication of the stages at which the competent authority will be consulted (vii) Particulars of the public participation process that will be conducted during the environmental impact assessment process (viii) A description of the tasks that will be undertaken as part of the environmental impact assessment process (ix) Identify suitable measures to avoid, reverse, mitigate or manage identified (x) impacts and to determine the extent of the residual risks that need to be managed and monitored	Section 8
2(1)(j) An undertaking under oath or affirmation by the EAP in relation to— (i) The correctness of the information provided in the report; (ii) The inclusion of comments and inputs from stakeholders and interested and affected parties; and (iii) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.	Section 9
2(1)(k) An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment	Section 9
2(1)(l) Information specified by the competent authority	Appendix E
2(1)(m) Any other matter	
2(2) Where a government notice *gazetted* by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.	Not currently applicable

Please note: As per the requirements of GN 960 of 5 July 2019, a copy of the report generated from the National web based environmental screening tool as contemplated in Regulation 16(1)(b)(v) of the EIA Regulations, 2014 (as amended) has been included in **Appendix E2**. Further, in terms of GN 320 of 20 March 2020, the site sensitivity verification is required to confirm the findings of the National Screening Tool. A copy of the Site Verification Report is also provided in **Appendix E1**.

1.4 ENVIRONMENTAL ASSESSMENT PRACTITIONER

Prism EMS Africa have been appointed to undertake the required Environmental Authorisation process in terms of the applicable EIA legislations. Details and expertise of the EAP who prepared the Scoping Report is provided in **Table 1-3** and their Curriculum Vitae is appended in Appendix A**.**

TABLE 1-3: DETAILS OF THE EAP

EAP:	De Wet Botha
Company:	Prism Environmental Management Services Africa
Qualifications:	M.A. Environmental Management | PHED
Experience:	23+ years
Affiliation/ Registration:	South African Council for Natural Scientific Professions (SACNASP): Pr.Sci.Nat. – 119979 Environmental Assessment Practitioners Association of South Africa (EAPASA): Reg.EAP – 2019/1209. Member of the International Association for Impact Assessors (IAIAsa) (1653)
Address:	PO Box 1401, Wilgeheuwel, Johannesburg, 1736
Tel:	066 208 1585
Email:	dewet@prismems.co.za / prism@prismems.co.za
Website:	www.prismems.co.za

Prism EMS Africa Team				
Designation	**Name**	**Qualification**	**Professional Registration**	**Specialist Assessment**
Project Director Principle EAP	De Wet Botha	MA. Environmental Management PHED	SACNASP: Pr.Sci.Nat. (119979) EAPASA: Reg.EAP (2019/1209) Member of the International Association for Impact Assessors (IAIAsa) (1653) Member of the Gauteng Wetland Forum Member of the South African Wetland Society Member of the Society of Wetland Scientists (International)	• Project Management, • Document Compilation, • Quality Control and Review.
Senior EAP	Elizmarie Bester	MSc Environmental Sciences	SACNASP: Pr.Sci.Nat. (135627) EAPASA: Reg.EAP (2020/2575) Member of IAIAsa (6450)	• Document Compilation • Quality Control and Review

Junior EAP	Ashley Bartmann	BSocSci. Hons. Env.Sci.	EAPASA: Cand.EAP (2025/19475)	• Document Compilation
Junior EAP	Brett Collett	B.Sc. Hons. (Env. Man.) B.Sc. (Env. Man. – Zoology)	FGASA Level 2 EAPASA: Cand.EAP (2025/20560) SACNASP: Cand.Sci.Nat (181127) Member of IAIAsa (2916561)	• Document Compilation
Junior EAP	Belinda Jacobs	BA Environmental Management	EAPASA: Cand EAP (2026/21709)	• Document Compilation

1.5 AUTHORITIES

The following key authorities are involved in the decision-making process related to the proposed project:

- The GDEnv with reference to activities under the:
- EIA Regulations and Listing Notices, 2014 (as amended) promulgated in terms of the NEMA (Act 107 of 1998).
- The DWS in reference to activities under:
- Section 21 of the National Water Act (Act No. 36 of 1998) [NWA].
  - The Regulations regarding the Procedural Requirements for Water Use License Applications and Appeals (R. 267 of 24 March 2017).
- Sedibeng District Municipality in reference to:
- Atmospheric Emission Licence in terms of Chapter 5 of the National Environmental Management: Air Quality Act (Act No. 39 Of 2004) (NEM:AQA) as amended.
- South African Civil Aviation Authority (SACAA) in reference to:
  - The South African Civil Aviation Act (Act No. 13 of 2009).
  - Civil Aviation Regulations, 2011

1.6 APPLICANT

The applicant is the entity that will assume responsibilities as the holder of the EA, if granted. Details of the applicant are contained in **Table 1-4**. Most of the properties are owned by the Applicant. Vaal Aerozone have been granted permission for applications over the properties owned by the Republic of South-Africa. The Power of Attorney related to this permission, is included under cover of **Annexure F1**.

TABLE 1-4: DETAILS OF THE APPLICANT AND LANDOWNER

Applicant:	Vaal Aerozone (Pty) Ltd
Contact Person:	Mr. P. Atanassov

Vaal Aerozone (Pty) Ltd is the development company established to facilitate the planning, investment, development, operation and long-term management of the proposed Vaal Aerotropolis in the Sedibeng District of Gauteng, South Africa. The organisation serves as the primary body through which public and private sector stakeholders collaborate to advance a catalytic regional development initiative aimed at enhancing trade, logistics, aviation, manufacturing, agricultural exports and economic growth within the Vaal region.

The Vaal Aerotropolis is envisaged as a strategically located aviation-centred economic hub that will integrate an international airport, cargo and logistics facilities, commercial precincts, agri-business zones, industrial development opportunities and supporting infrastructure. As the project proponent, Vaal Aerozone is responsible for coordinating investment, project planning, stakeholder engagement and regulatory compliance to ensure that the development is implemented in a sustainable and responsible manner.

Vaal Aerozone is led by a board and management team comprising experienced professionals with expertise in airport development, aviation operations, infrastructure planning, investment facilitation, strategic management and economic development. The company reports that its leadership collective possesses decades of experience across airport operations, airline route development, air cargo systems, airport planning, aviation project management, security systems, investment structuring and risk management. This breadth of expertise provides the technical and managerial capacity necessary to oversee the development of complex aviation and logistics infrastructure projects.

The organisation's leadership includes professionals with extensive international and South African aviation experience. The management team has been involved in airport development initiatives, aviation consultancy, route development programmes, airport operations management and the delivery of aviation-related infrastructure projects. Such experience allows Vaal Aerozone to engage effectively with regulatory authorities, investors, specialist consultants, infrastructure providers and surrounding communities throughout the planning and implementation phases of the project.

In addition to its internal expertise, Vaal Aerozone has established relationships with key public and private sector stakeholders. The project is being advanced through collaboration with government institutions, regional development agencies, investors and municipal authorities. These partnerships are intended to support the long-term viability of the Vaal Aerotropolis while promoting regional economic development, job creation, industrial diversification and enhanced trade linkages.

Vaal Aerozone is committed to responsible development principles, including sound governance, transparency, stakeholder engagement and sustainable economic growth. Through the EIA process and associated environmental authorisation requirements, the company seeks to ensure that environmental considerations are appropriately integrated into project planning and decision-making. This commitment reflects the applicant's intention to balance economic development objectives with environmental stewardship and social responsibility.

Accordingly, Vaal Aerozone possesses the organisational capacity, industry experience, leadership expertise and stakeholder support necessary to act as the applicant for the Environmental Impact Assessment process and to responsibly advance the planning and implementation of the proposed Vaal Aerotropolis development.

Scan the QR-codes for the company website (https://vaalaerozone.co.za/) and information on the proposed Vaal Aerotropolis development.

1.7 PROPERTY AND LOCATION

1.7.1 DEVELOPMENT LOCATION AND PROPERTIES

Within the above-mentioned context, the proposed development area of the Vaal Aerotropolis will be located on a total of 13 farm portions, measuring approximately 4 750ha in extent, located in the Emfuleni Local Municipality, Gauteng Province.

Of these 13 farm portions, all will be affected during Phase 1 of the development and will be referred to as the **Application Area** (**Table 1-5**, **Table 1-6** and **Figure 1-6**). However, it should be noted that *in-situ* surveys were conducted on an area exceeding that of the application area. This survey area will be referred to as the **Total Survey Area** (**Figure 1-7** and **Figure 1-8**).

TABLE 1-5: SURVEYOR GENERAL DIAGRAM NUMBERS OF APPLICATION AREA

Surveyor General Diagram number	Property Description	Local Municipality
T0IQ00000000053000047	Part of Portion 47 of farm Klipkop 530 IQ	Emfuleni
T0IQ00000000053000000	Part of the Remainder of the farm Klipkop 530 IQ	Emfuleni
T0IQ00000000055400003	Re of Portion 3 of the farm Rietkuil 554 IQ	Emfuleni
T0IQ00000000055400009	Re of Portion 9 (Ptn of Ptn 3) of the farm Rietkuil 554 IQ	Emfuleni
T0IQ00000000055400026	Portion 26 of the farm Rietkuil 554 IQ	Emfuleni
T0IQ00000000055500005	Portion 5 of the farm Vlakplaats 555 IQ	Emfuleni
T0IQ00000000055500006	Re of Portion 6 of the farm Vlakplaats 555 IQ	Emfuleni
T0IQ00000000055500007	Portion 7 of the farm Vlakplaats 555 IQ	Emfuleni
T0IQ00000000055500017	Re of Portion 17 of the farm Vlakplaats 555 IQ	Emfuleni
T0IQ00000000055500018	Portion 18 (Ptn of Ptn 6) of the farm Vlakplaats 555 IQ	Emfuleni
T0IQ00000000055500020	Portion 20 of the farm Vlakplaats 555 IQ	Emfuleni
T0IQ00000000055500051	Portion 51 of the farm Vlakplaats 555 IQ	Emfuleni
T0IQ00000000055500052	Portion 52 of the farm Vlakplaats 555 IQ	Emfuleni

Furthermore, the corner point coordinates of the total application area are indicated in **Table 1-6** and can be seen in **Figure 1-8**.

TABLE 1-6: CORNER COORDINATES OF THE APPLICATION AREA

Point	Latitude	Longitude	Point	Latitude	Longitude
A	-26,5631367	27,6782414	X	-26,6235514	27,680876
B	-26,5724473	27,7119542	Y	-26,6191821	27,6800494
C	-26,5717003	27,7137366	Z	-26,618773	27,6828394
D	-26,56716498	27,71454084	AA	-26,6169503	27,6818275
E	-26,56964767	27,7325621	AB	-26,6177115	27,6797446
F	-26,59642674	27,72835109	AC	-26,6132766	27,6781567
G	-26,5953853	27,7389373	AD	-26,6090808	27,6737655
H	-26,5970682	27,7497903	AE	-26,6082232	27,6755423
I	-26,6107626	27,756443	AF	-26,6013198	27,6784528

Point	Latitude	Longitude	Point	Latitude	Longitude
J	-26,6111093	27,7620265	AG	-26,6022384	27,6692059
K	-26,61789189	27,73396112	AH	-26,6254136	27,7111204
L	-26,6280137	27,7317545	AI	-26,6226418	27,7300366
M	-26,6334741	27,6815306	AJ	-26,6158528	27,7287589
N	-26,6320755	27,6809037	AK	-26,6162669	27,7265421
O	-26,6325433	27,6795379	AL	-26,6196283	27,7271593
P	-26,6339856	27,6801395	AM	-26,6200073	27,7248711
Q	-26,6359671	27,664727	AN	-26,6166971	27,7242392
R	-26,6292231	27,665541	AO	-26,6175542	27,7196511
S	-26,6279971	27,6739314	AP	-26,6207734	27,7202449
T	-26,629237	27,6755218	AQ	-26,621167	27,7178678
U	-26,6290538	27,6776773	AR	-26,6180009	27,7172592
V	-26,6274935	27,6773765	AS	-26,6193681	27,7099374
W	-26,6272606	27,6789693			

Refer to **Figure 1-7** and **Figure 1-8** below for the locality map and aerial locality map showing the Total Survey Area of the proposed Vaal Aerotropolis; while **Figure 1-6** displays the Application Area. Please note that A3 maps are also provided in **Appendix C**.

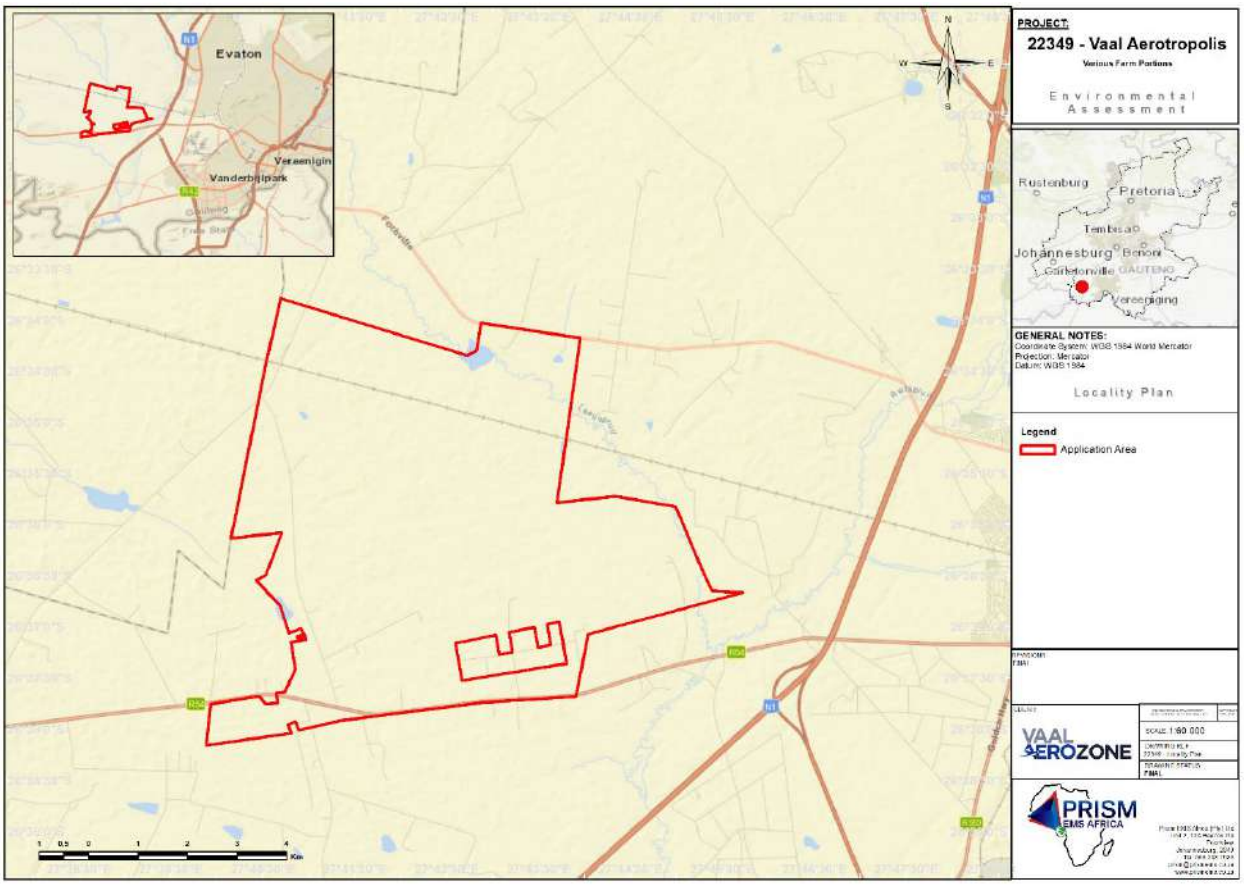


FIGURE 1-6: LOCALITY PLAN OF THE APPLICATION AREA

1.7.2 DEVELOPMENT CONTEXT

The Vaal Aerotropolis aims to become a driving force for economic growth and global trade by serving as a gateway to South African (e.g. Cape Town, George, Durban), regional (e.g., Windhoek, Gaborone, Maputo), and international (e.g., North America, Europe, Southeast Asia) regions. The Aerotropolis will ultimately be comprised of many different components including an Airport City, Agri Zone, Trade Zone, solar PV farm and ancillary services / infrastructure, which will be implemented across a 3-phase 60-year timeframe.

The development will be managed as a Special Economic Zone (SEZ), in accordance with the Special Economic Zones (SEZ) Act, 2014 (Act No. 16 of 2014) and its associated regulations.

Phase 1 (subject of this application) focuses on establishing a catalytic mixed-use hub, anchored by a new international airport, and will lay the groundwork for Phases 2 and 3 to expand upon. This phase entails commencement related construction for the Airport Precinct, Airport City, Agri-Zone and Trade Zones whilst also implementing essential services infrastructure such as road connections, bulk water/sewer reticulations, and storage facilities. Any land not developed during Phase 1 will be utilised for agricultural activities until such time as Phases 2 and 3 are ready to commence.

It is expected that the total Phase 1 area, in addition to accommodating 7.2 mppa, will span roughly 3 545 hectares, divided into 29 erven with zoning for ”Aerodrome”, “Business 1”, “Public services / utilities”, an “Agricultural” for the purpose of the Agri-Zone, “Private open space” and “Private Street”. The development emphasizes inclusive growth, with over 70% of new Small, Medium, and Micro Enterprises (SMMEs) anticipated to be black-owned. To ensure that the proposed development is both scalable and resilient, several other parties / stakeholders (e.g., Rand Water, Emfuleni Local Municipality, ESKOM) will be involved. Each applicable authority / stakeholder will be consulted and authorisations obtained in due time as the project proceeds.

Overall, Phase 1 represents a transformative step toward regional economic revitalisation, sustainable urban development, and enhanced connectivity for southern Gauteng and South Africa as a whole.

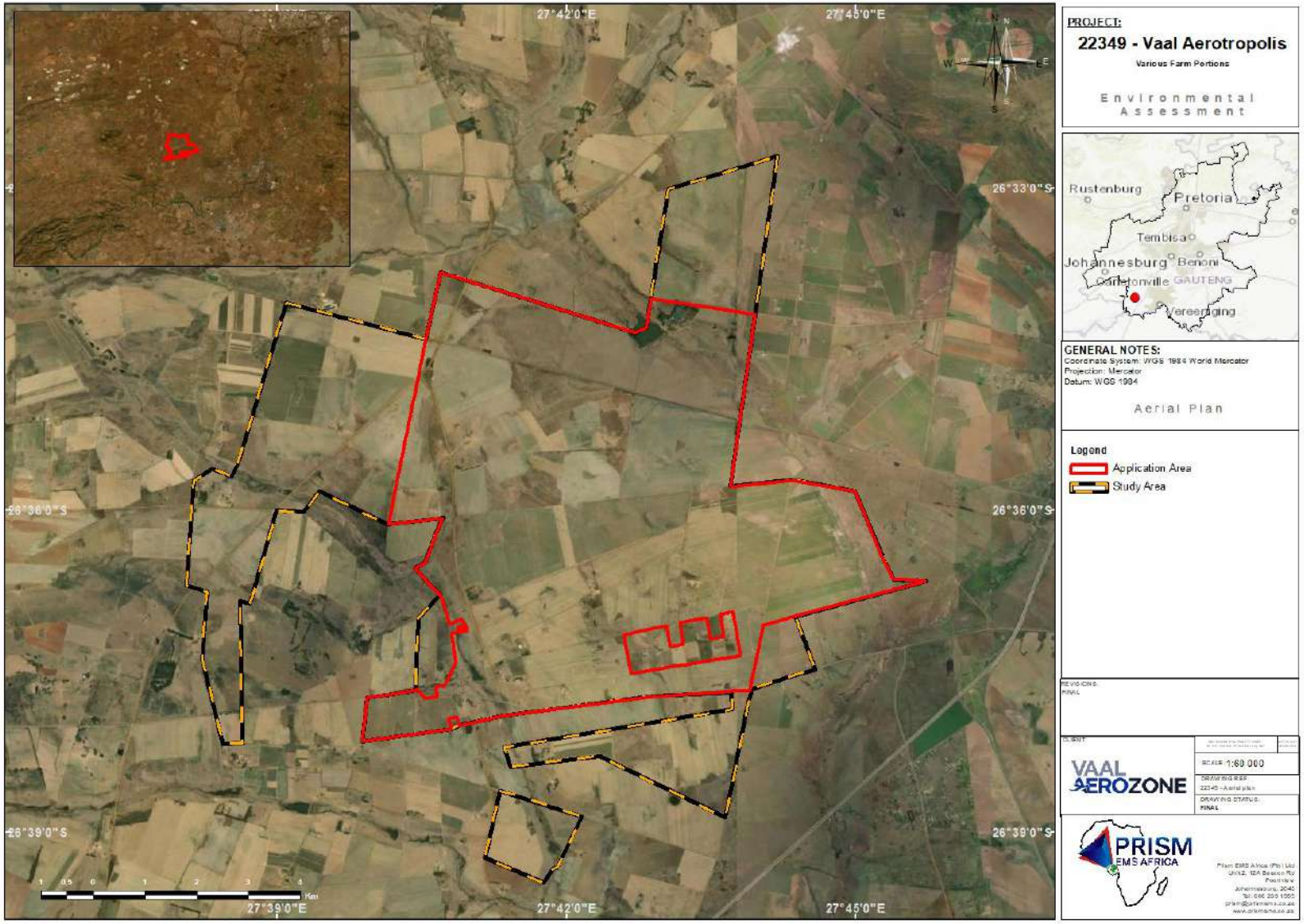
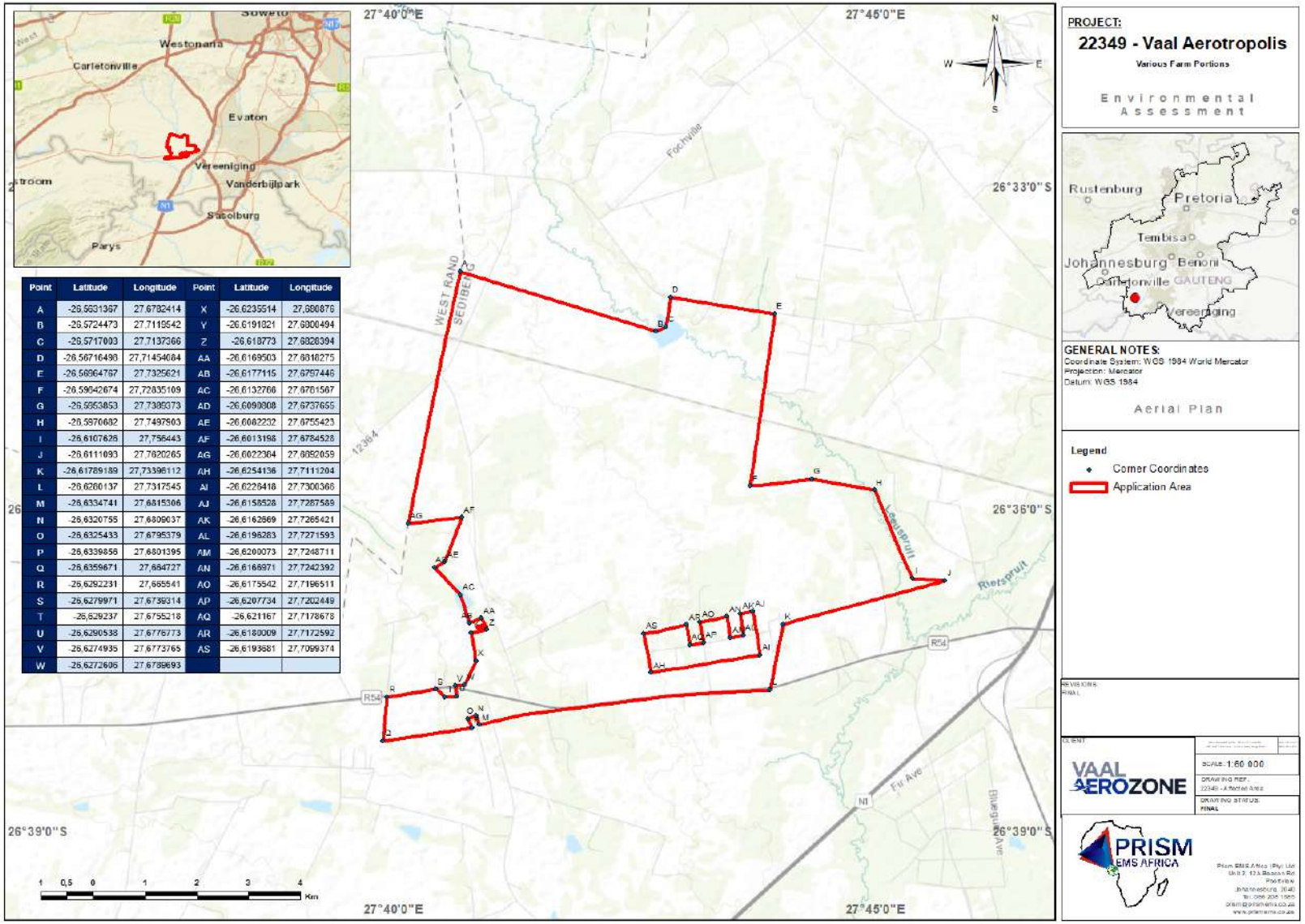


FIGURE 1-7: AERIAL PLAN OF TOTAL STUDY AREA



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G	-26,5953853	27,7309373	AD	-26,6090008	27,6737655
H	-26,5970682	27,7497903	AE	-26,6082232	27,6755423
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K	-26,61789189	27,73396112	AH	-26,6254136	27,7111204
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U	-26,6290538	27,6776773	AR	-26,6180009	27,7172592
V	-26,6274935	27,6773765	AS	-26,6193681	27,7099374
W	-26,6272606	27,6789693			

FIGURE 1-8: LOCALITY MAP (INCLUDING CORNER POINTS) OF APPLICATION AREA

2. LEGISLATIVE FRAMEWORK

This section aims to provide an overview of key policy, legislation, plans, guidelines and municipal development planning frameworks triggered by the proposed project. The requirements set out in these Acts and Regulations will be adhered to through the scoping and impact assessment phases of the project.

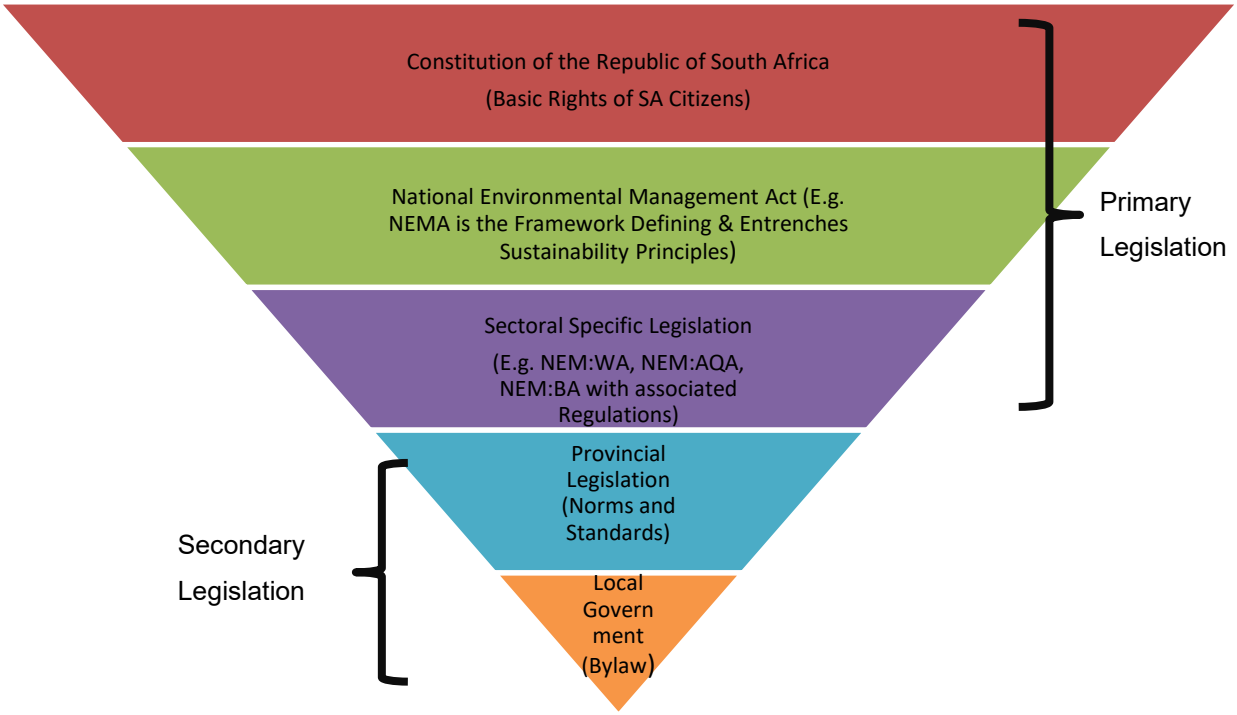


FIGURE 2-1: SOUTH AFRICAN ENVIRONMENTAL LEGISLATION HIERARCHY

The following Acts, Regulations, By-Laws and Guidelines are applicable to the proposed development.

2.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

Section 24 of the Constitution states that –

"Everyone has the right to -

a) an environment that is not harmful to their health or well-being; and
b) have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
   (i) Prevent pollution and ecological degradation;
   (ii) Promote conservation; and
   (iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

2.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA), 1998 (ACT NO. 107 OF 1998)

The NEMA is the umbrella framework for all environmental legislation primarily to assist with implementing the environmental rights of the Constitution (refer to Section 2.1). The NEMA provides fundamental principles required for environmental decision making and to achieve sustainable development. It also makes provision for duty of care to prevent, control and rehabilitate the effects of significant pollution and environmental degradation, and prosecute environmental crimes. These principles must be adhered to and taken into consideration during the impact assessment phase.

NEMA defines "environment" as –

(i) "the surroundings within which humans exist and that are made up of –
(ii) *the land, water and atmosphere of the earth*;
(iii) micro-organisms, plants and animal life;
(iv) any part or combination of (i) or (ii) and the interrelationship among and between them; and
(v) the physical, chemical, aesthetic and cultural, properties and conditions of the foregoing that influence human health and well-being."

Section 24D and 24(2) of the NEMA makes provision for the publication of a list and associated regulations containing activities identified that may not commence without obtaining prior environmental authorisation from the competent authority. These regulations are referred to as the EIA Regulations and are interpreted hand in hand with the various listed activities discussed further below.

2.2.1 ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 (GN R982 OF 4 DECEMBER 2014)(AS AMENDED)

The EIA regulations were promulgated in terms of Section 24 of the NEMA, for the purpose of providing methodologies and specific requirements for the undertaking of an EIA. The Regulations stipulate that any proposed activity listed in the associated notices must undertake either a Basic Assessment (BA) or Scoping & Environmental Impact Report (S&EIR) in order to obtain an EA (if granted) by the competent authority before the commencement of the specified listed activity.

The EIA Regulations provide the minimum requirements for appointing an EAP and for undertaking the relevant PPP as required. They also detail the contents of the impact assessment reports and all other aspects associated with BA and/or EIAs.

The following listed activities have been identified in terms of the subsequent Government Notices [1]:

[1] *Although all applicable Listing Notice activities are presented, the highest-ranking activity(ies) will take precedence and supersede the lower-ranking activity(ies).*

2.2.1.1 LISTING NOTICE 1: GN R327 OF 7 APRIL 2017 (AS AMENDED)

Activities listed under this Notice require a Basic Assessment process to be undertaken. The following activities are triggered in terms of Listing Notice 1 and include:

- Activity 9 – The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more.
- Activity 10 – The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, wastewater, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more.
- Activity 11 – The development of facilities or infrastructure for the transmission and distribution of electricity – (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.
- Activity 12 - The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.
- Activity 13 – The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.
- Activity 14 - The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.
- Activity 19 - The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.
- Activity 24 - The development of a road—(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.
- Activity 27 – The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.
- Activity 28 – Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development – (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.

- Activity 56 – The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre – (i) where the existing reserve is wider than 13.5 metres; or (ii) where no reserve exists, where the existing road is wider than 8 metres.

Please refer to **Section 4.2** for a more detailed assessment of why these activities are triggered.

2.2.1.2 LISTING NOTICE 2: GN R325 OF 7 APRIL 2017

Activities listed under this Notice require Scoping and EIA to be undertaken. Activities that triggered Listing Notice 2 include:

- Activity 4 – The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage area occurs in containers with a combined capacity of more than 500 cubic meters.
- Activity 6 – The development of facilities or infrastructure for any process or activity which requires a permit or license or an amended permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent.
- Activity 7 – The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods – (ii) in liquid form, outside an industrial complex, using pipelines, exceeding 1 000 meters in length, with a throughput capacity of more than 50 cubic meters per day.
- Activity 8 – The development of – i) airports, or ii) runways or aircraft landing strips longer than 1,4 kilometres.
- Activity 15 – The clearance of an area of 20 hectares or more of indigenous vegetation.
- Activity 16 – The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the highwater mark of the dam covers an area of 10 hectares or more.
- Activity 27 – The development of a road (iv) catering for more than one lane of traffic in both directions.

As such a Scoping and EIA process is applicable. Please refer to **Section 4.2** which provides a more detailed assessment of why these activities are triggered.

2.2.1.3 LISTING NOTICE 3: GN R324 OF 7 APRIL 2017

Activities listed under this Notice require a Basic Assessment process to be undertaken but only in specified geographic areas. Parts of the proposed development area fall within a Critical Biodiversity Area (CBA): Important Area and Ecological Support Area (ESA) in terms of the Gauteng Conservation Plan version 4., Zone 3: High Control Zone of the Gauteng Provincial Environmental Management Framework (GPEMF) as well as the historical extent of a threatened ecosystem (Soweto Highveld Grassland), as such a number of activities are triggered in terms of Listing Notice 3. These include:

- Activity 2(c) (ii)(iv)(v)(vi) – The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites

identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004) (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority.

- Activity 3(c) (ii)(iv)(v)(vi) – The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower – a) is to be placed on a site not previously used for the purpose; and b) will exceed 15 meters in height. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority.
- Activity 4(c) (ii)(iv)(v)(vi)(vii) – The development of a road wider than 4 metres with a reserve less than 13,5 metres. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority. (vii) Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas.
- Activity 6(c) (ii)(iv)(v)(vi)(viii) – The development of resorts, lodges, hotels, tourism or hospitality facilities that sleeps 15 people or more. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority. (viii) Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas.
- Activity 10(c) (ii)(iv)(v)(vi)(vii) – The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority. (vii) Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas.
- Activity 12(c) (i)(ii) – The clearance of an area of 300 square metres or more of indigenous vegetation. – (i) Within any critically endangered or endangered ecosystem listed in terms of section

52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004. (ii) Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;

- Activity 14(c) (ii)(iv)(v)(vi) – The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority.
- Activity 18 (c) (ii)(iv)(v)(vi)(vii) – The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority. (vii) Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas.

Please refer to Section 4.2 which provides a more detailed assessment of why these activities are triggered.

2.2.2 GN 164 OF 2 MARCH 2018 | ADOPTION OF THE GAUTENG PROVINCIAL ENVIRONMENTAL FRAMEWORK STANDARD AND EXCLUSION OF ASSOCIATED ACTIVITIES FROM THE REQUIREMENT TO OBTAIN ENVIRONMENTAL AUTHORISATION IN TERMS OF SECTION 24(2)(D) AND 24(10)(A) READ IN CONJUNCTION WITH SECTION 24(1)(D) OF NEMA, 1998 FOR THE IMPLEMENTATION OF THE GAUTENG PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK

In terms of the Gauteng Provincial Environmental Management Framework (GPEMF, 2019), the largest portion of the area earmarked for the proposed development falls within Zone 4 – Normal control zone. There are some interspersed areas which appear to be more sensitive, falling in Zone 3 – a high control zone (outside the urban development zone). Based on the identified zones and expected sensitivities on the site, Environmental Authorisation is required prior to the commencement of any activities.

2.2.3 GN 960 OF 5 JULY 2019 | NOTICE OF THE REQUIREMENTS TO SUBMIT A REPORT GENERATED BY THE NATIONAL WEB BASED ENVIRONMENTAL SCREENING TOOL IN TERMS OF SECTION 24(5)(H) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND REGULATION 18(1)(B)(V) OF THE EIA REGULATIONS, 2014 (AS AMENDED)

As per the requirements of GN 960 of 5 July 2019, a Screening Report was generated on the National Screening Tool website and is submitted in **Appendix E.2.**

2.2.4 PROCEDURES FOR THE ASSESSMENT AND MINIMUM CRITERIA FOR REPORTING ON IDENTIFIED ENVIRONMENTAL THEMES IN TERMS OF SECTION 24(5)(A) AND (H) AND 44 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 WHEN APPLYING FOR ENVIRONMENTAL AUTHORISATION (GN 320 OF 20 MARCH 2020) AND GN 1150 OF 30 OCTOBER 2020

The Department of Forestry and Fisheries and the Environment (DFFE) published a number of protocols for the specialist assessment and minimum report requirements including aspects such as agriculture, noise and terrestrial and aquatic biodiversity.

DFFE also published general requirements for site sensitivity verification (GN 320 of 20 March 2020). This notes that a site sensitivity verification can be undertaken by an EAP or a specialist and should utilize the following methodology:

- A desktop analysis, using satellite imagery;
- A preliminary on-site inspection; and
- Any other available and relevant information.
- Further, the outcome of the site sensitivity verification must be recorded in a report that:
- Confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.
- Contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and
- Is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations (EIA Regulations).

Based on the identified sensitivity (including the National Screening Tool Report as well as desktop and satellite imagery), **Table 2-1** provides an overview of the assessments required. A copy of the National Screening Tool as well as the Site Verification Assessment is included in **Appendix E.**

TABLE 2-1: DESKTOP SENSITIVITY AS IDENTIFIED BY THE NATIONAL SCREENING TOOL

Theme	Sensitivity				Specialist Assessment Required
	Very High	High	Medium	Low	
Agricultural	✓				The National Screening Tool as well as the Agricultural Potential Atlas IV, indicates that the agricultural potential of the proposed site is **very high to moderate**. As such, an **Agricultural Impact Assessment** will be undertaken and included in the EIA Report.
Animal Species		✓			The National Screening Tool has indicated that the Animal species sensitivity is **high**, with potential *Aves-Tyto capensis, Aves-Mycteria ibis, Aves-Hydroprogne caspia, Aves-Eupodotis senegalensis, Insects-Aloeides dentatis dentatis, Insecta-Lepidochrysops praeterita, Insecta-Lepidochrysops procera, Mammalia-Crocidura maquassiensis, Mammalia-Hydrictis maculicollis* and *Mammalia-Ourebia ourebi ourebi*. **An Animal Impact Assessment, Avi-Faunal Assessment as well as a Terrestrial Biodiversity Impact Assessmen**t will be undertaken and included in the EIA Report.
Aquatic Biodiversity	✓				The National Screening Tool has indicated that the aquatic biodiversity is very high (rivers and wetlands). **A Wetland Impact Assessment** and an **Aquatic Impact Assessment** will be undertaken and included in the EIA Report.
Archaeological and Cultural Heritage				✓	The Screening Tool indicated low sensitivity i.r.o. the heritage theme. To ensure no negative impact on any sites of Heritage significance, **a Phase 1 Heritage Impact Assessment** (HIA) will be undertaken and included in the EIA Report. Formal clearance in terms of the National Heritage Resources Act (NHRA) from the South African Heritage Resource Agency (SAHRA) is required, and will be applied for, as part of the EIA process.
Civil Aviation		✓			The National Screening Tool has indicated that the site has high civil aviation sensitivity. As the proposed development is for an airport, a **Civil Aviation Report** will be undertaken and included in the EIA Report.
Defence				✓	None

Theme	Sensitivity				Specialist Assessment Required
	Very High	High	Medium	Low	
Palaeontology		✓			The National Screening Tool has indicated that the Palaeontology sensitivity is high. A **Palaeontological Impact Assessment** will be undertaken and included in the EIA Report.
Plant Species				✓	The National Screening Tool has indicated that the Plant species sensitivity is low. To ensure a rigorous and comprehensive understanding of the possible sensitivity of the area, a **Plant Species Assessment as well as a Terrestrial Biodiversity Impact Assessment** will be undertaken and included in the EIA Report.
Terrestrial Biodiversity	✓				According to the National Screening Tool, the site has very high sensitivity in terms of terrestrial biodiversity (as the site occurs within a CBA1 and 2, ESA 1 and 2, National Protected Area Expansion Strategy (NPAES), is expected to contain the vulnerable Soweto Highveld Grassland vegetation unit and a section of the application area falls within the Tweefontein Private Nature Reserve). **A Terrestrial Biodiversity Impact Assessment** will be undertaken and included in the EIA Report.

2.3 NATIONAL WATER ACT (NWA), 1998 (ACT NO. 36 OF 1998)

The NWA is the primary regulatory legislation; controlling and managing the use of water resources as well as the pollution thereof and is implemented and enforced by the DWS. Section 21 of the NWA lists water uses that must be licensed unless it is listed in the schedule (existing lawful use) and/or is permissible under a General Authorisation (GA), or if a responsible authority waives the need for a Water Use Licence. Section 21 water uses include:

- Section 21(a): taking water from a water resource
- Section 21(b): storing water
- Section 21(c): impeding or diverting the flow of water in a watercourse
- Section 21(d): engaging in a stream flow reduction activity contemplated in section 36
- Section 21(e): engaging in a controlled activity as identified in Section 37 (1) or declared under Section 38 (1).
- Section 21(f): discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall, or other conduit.
- Section 21(g): disposal of waste (i.e. effluent from sewage works) in a manner which may detrimentally impact on a water resource;
- Section 21 (h): disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.
- Section 21 (i): altering the bed, banks, course or characteristics of a watercourse.
- Section 21 (j): removing, discharging, or disposing of water found underground if it necessary for the efficient continuation of an activity or for the safety of people.
- Section 21(k): using water for recreational purposes.

Applicable definitions included in the NWA include watercourse which is defined as "*(a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse (and a reference to a watercourse includes, where relevant, its bed and banks).* The Act also defines a wetland as "*land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil".*

Due to the presence of freshwater systems (the Leeuspruit and Klein Rietspruit streams and various wetlands) as well as the nature of the development and services required for the proposed development, the following Section 21 uses are expected to be triggered and may require licencing:

- Section 21 (a): taking water from a water resources (boreholes).
- Section 21 (b): storage of water.
- Section 21 (c): impeding or diverting the flow of water in a watercourse.

- Section 21 (f): discharge waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.
- Section 21 (g): discharging waste (i.e. effluent from sewage works) in a manner which may detrimentally impact on a water resource
- Section 21 (i): altering the bed, banks, course or characteristics of a watercourse.
- Section 21 (j): removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.

A water use license application has been lodged with the Department of Water and Sanitation (Ref No: WU40964) to authorise the proposed water uses prior the commencement of the development.

2.3.1 THE REGULATIONS REGARDING THE PROCEDURAL REQUIREMENTS FOR WATER USE LICENSE APPLICATIONS AND APPEALS (R. 267 OF 24 MARCH 2017)

It should be noted that on the 24 March 2017, the Regulations regarding the Procedural Requirements for Water Use License Applications and Appeals (R. 267 of 24 March 2017) were published and came into effect. These Regulations provide the requirements for the WULA process. This WULA has been compiled in line with these requirements. A copy of the WUL Summary Report will be made available for public review as part of the public review of the EIA Report.

2.4 NATIONAL HERITAGE RESOURCE ACT (NHRA), 1999 (ACT NO. 25 OF 1999)

The NHRA provides for the protection and management of South Africa's heritage resources. The South African National Heritage Resources Agency (SAHRA) is the administering authority in regard to all matters relating to heritage resources. A heritage resource refers to any historically important feature such as graves, trees, archaeology, culturally significant symbols, spaces, landscapes and fossil beds as protected heritage resources. In terms of Section 38 of the NHRA, SAHRA can call for a HIA for certain categories of development. The NHRA also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required.

Section 38 (1) of the NHRA notes that the relevant heritage authority should be notified provided with details such as location, nature and extent of the following developments:

a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
b) the construction of a bridge or similar structure exceeding 50 m in length;
c) any development or other activity which will change the character of a site—
    (i) exceeding 5 000 m^2 in extent; or
    (ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

d) the re-zoning of a site exceeding 10 000 m^2 in extent; or

e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

Various grave sites and historic buildings (older than 60 years) were discovered on the site. Thus, a HIA will be conducted, and the findings will be included in the EIA Report. The relevant applications to relocate affected grave sites and to demolish historical buildings will be lodged, if necessary, with the Provincial Heritage Resources Authority – Gauteng Province (PHRA-G). It is however not expected that any such application will be required for the first phase of the development.

The SAHRA Paleontological map has been utilised and confirmed that the study area site is predominantly of moderate paleontological significance, and further studies are required for this aspect. A Palaeontology Impact Assessment (PIA) will be undertaken as part of the EIA phase and included in the EIA Report.

Furthermore, SAHRA will be notified and provided an opportunity to comment on the Scoping Report which is available for public review.

2.5 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (NEM:BA), 2004 (ACT NO. 10 OF 2004)

The NEM:BA aims to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA. The purpose of the NEM:BA is to protect ecosystems and the species within as well as the promoting of sustainable use of indigenous biodiversity. During any environmental authorisation process the following regulations are considered and researched if at any stage the following regulations are applicable:

- Alien and Invasive Species Regulations;
- Alien and Invasive Species List;
- Lists of Critically Endangered, Endangered, Vulnerable and Protected Species; and
- Threatened or Protected Species Regulations.

A Terrestrial Biodiversity Impact Assessment Report will be undertaken to confirm the presence of any threatened species and alien and invasive species. The detailed report will form part of the EIA Report.

2.6 NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT (NEM:PAA), 2003 (ACT 57 OF 2003) (AS AMENDED)

The purpose of the NEMPAA is to provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes.

The objectives of this Act are-

- To provide, within the framework of national legislation, including the NEMA, for the declaration and management of protected areas;
- To provide for co-operative governance in the declaration and management of protected areas;
- To affect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity;
- To provide for a representative network of protected areas on state land, private land and communal land;
- To promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas;
- To promote participation of local communities in the management of protected areas, where appropriate; and
- To provide for the continued existence of South African National Parks.

In line with this, the Minister has established a Register of Protected Areas which was utilised to determine whether the proposed development is affected by Protected areas.

A portion of the site earmarked for future expansion of the Vaal Aerotropolis falls within the Tweefontein Private Nature Reserve (Portions 2 and 4 of the farm Tweefontein 523 IQ). The Tweefontein Private Nature Reserve, proclaimed on 17 August 1955 under Provincial Gazette 2529, Notice No. 195, has however not been utilised, managed or maintained as a nature reserve since its establishment.

An application for the withdrawal of the Declaration of the farm portions as a Private Nature Reserve, is currently in process.

2.7 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE MANAGEMENT ACT (NEM:WA), 2008 (ACT NO. 59 OF 2008)

The NEM:WA aims to regulate waste management in South Africa in order to protect health and the environment through the provision of reasonable measures for the prevention of pollution and ecological degradation.

The Act includes regulations which provide a list of waste management activities that require a waste management licence in terms of NEM:WA (GN 921 of 29 November 2013).

The proposed development has been assessed, and a Norms and Standards Registration is required for the proposed development, as the facility triggers Activity 2 of Category C i.r.o the storage of waste. Domestic waste will be collected by municipal waste collectors and disposed of at the municipal landfill, as confirmed in writing by the Emfuleni Local Municipality.

Storage Facilities in excess of 100m^3 (general waste) or 80m^3 (hazardous) will comply with the Norms and Standards for the Storage of Waste. The waste storage facility will be registered with the competent authority within 90 days prior to the construction of the development.

2.8 NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT (NEM: AQA), 2004 (ACT NO. 39 OF 2004)

The aim of NEM: AQA is to regulate air quality in order to protect the environment from pollution and ecological degradation.

The proposed development will trigger activities in terms of Category 2, subcategory 2.4 which refers to the storage and handling of Petroleum Products, as the combined storage capacity of petroleum products on site will be greater than a 1000m^3. Therefore, an application for an Air Emissions License will be lodged with the relevant authority.

2.9 PROTECTION OF PERSONAL INFORMATION (POPI) ACT, 2013 (ACT NO. 4 OF 2013)

The Protection of Personal Information (POPI) Act, 2013 (Act No. 4 of 2013), aims to promote the protection to personal information processed by public and private bodies. Section 14 of the Constitution of the Republic of South Africa, 1996, provides that everyone has the right to privacy, this includes the right to protection of personal information.

“The purpose of the POPI Act is to –

a) Give effect to the constitutional right to privacy, by safeguarding personal information when processed by a responsible party, subject to justifiable limitations that are aimed at -
    (i) Balancing the right to privacy against other rights, particularly the right of access to information; and
    (ii) Protecting important interests, including the free flow of information within the Republic and across international borders,

b) Regulate the manner in which personal information may be processed, by establishing conditions, in harmony with international standards, that prescribe the minimum threshold requirements for the lawful processing of personal information,
c) Provide persons with rights and remedies to protect their personal information from processing that is not in accordance with this Act,
d) Establish voluntary and compulsory measures, including the establishment of an Information Regulator, to ensure respect for and to promote, enforce and fulfil the rights protected by this Act.

The POPI Act aims to ensure that personal information is processed by public and private bodies in a manner that gives effect to the right to privacy. Personal information, as defined by the Act is inclusive of:

e) Information relating to race, gender, sex, pregnancy, marital status, national, ethnic or social origin, colour, sexual orientation, age, physical or mental health, well-being, disability, religion, conscience, belief, culture, language and birth of the person,
f) Information relating to the education or the medical, financial, criminal or employment history of the person,
g) Any identifying number, symbol, e-mail address, physical address, telephone number, location information, online identifier or other particular assignment to the person,
h) The biometric information of the person,
i) The personal opinions, views or preferences of the person,
j) Correspondence sent by the person that is implicitly or explicitly of a private or confidential nature or further correspondence that would reveal the contents of the original correspondence,
k) The views or opinions of another individual about the person,
l) The name of the person if it appears with other personal information relating to the person or if the disclosure of the name itself would reveal information about the person.

Consent is defined by the act as follows: *any voluntary, specific and information expression of will in terms of which permission is given for the processing of personal information*.

This Public Participation Process has been carried out in line with the POPI Act. Personal Information collected by Prism EMS Africa will not be made available to the public or Authorities unless written consent is given by registered I&APs.

2.10 OTHER LEGISLATION AND GUIDELINES

In addition to the above, the following national, provincial and municipal guidelines, plans and by-laws have been taken into account:

2.10.1 NATIONAL GUIDELINES AND PLANS

The following national plans and guidelines were reviewed and taken into account where necessary. More detail is provided in the subsections below.

2.10.1.1 NATIONAL BIODIVERSITY ASSESSMENT (NBA)

The National Biodiversity Assessment (NBA) was completed as a collaboration between the South African National Biodiversity Institute (SANBI), the DFFE and other stakeholders, including scientists and biodiversity management experts over a three-year period (Driver at al., 2012).

The purpose of the NBA is to assess the state of South Africa's biodiversity with a view to understanding trends over time and informing policy and decision-making across a range of sectors (Driver at al., 2012).

2.10.1.2 DEA, 2014 – INTEGRATED ENVIRONMENTAL MANAGEMENT (IEM) GUIDELINE SERIES

The following guidelines have been adopted by the applicant in the pursuit of best practice and sustainable development and are considered in the management measures and mitigation of impacts identified.

- Integrated Environmental Management Guideline: Guideline on Need and Desirability.
- Integrated Environmental Management Guideline Series (Guideline 7).
- Public Participation in the Environmental Impact Assessment Process; and
- Guidelines on Alternatives.

2.10.1.3 NATIONAL CLIMATE CHANGE ADAPTATION STRATEGY, 2019

The National Climate Change Adaptation Strategy (DEFF, 13 November 2019) (NCCAS) provides a common vision of climate change adaptation and climate resilience for the country and outlines priority areas for achieving this vision. Since the NCCAS is specifically focussed on adaptation to climate change, mitigation of greenhouse gas emissions is dealt with in other policy documents. The NCCAS however acknowledges that adaptation action and mitigation action impact on one another.

The NCCAS is an important step forward for South Africa, as it (DEFF, 13 November 2019):

- Acts as a common reference point for climate change adaptation efforts in South Africa over the next 1 to 10 years, providing guidance across all levels of government, sectors, and stakeholders affected by climate variability and change.
- Provides a policy instrument in which national climate change adaptation objectives for the country can be articulated to provide overarching guidance to all sectors of the economy.
- Facilitates the degree to which development initiatives at different levels of government and business integrate and reflect critical climate change adaptation priorities and thus inform resource allocation by the various stakeholders towards climate change resilience.
- Guides stronger coherence and coordination on climate change adaptation activities between different institutions and levels of government.
- Supports South Africa in meeting its international obligations by defining the country's vulnerabilities, plans to reduce such vulnerabilities and leverage opportunities, outlining the required resources for such action, whilst demonstrating progress on climate change adaptation.

The NCCAS is divided into sets of strategic objectives, strategic interventions and strategic outcomes with associated actions. The document is directed not only at national government departments, but speaks to South African society as a whole, including the key relevant sectoral institutions, provincial governments and municipalities, and non-governmental entities including the private sector, the research community and civil society.

The vision of the NCCAS is:

- To transition to a climate resilient South Africa, which will follow a sustainable development path, guided by anticipation, adaptation and recovery from a changing climate and environment to achieve our development aspirations.

Although predominantly aimed at government, the strategic objectives, strategic interventions, and strategic outcomes with associated actions outlined in the NCCAS provide a host of opportunities for corporate social investment.

The following actions will be followed in the EIA phase to ensure the resilience of the project:

- Identify climate change impacts relevant to the project location and activities, such as increased temperatures, rainfall and wind speeds.
- Determine the project's vulnerability to climate change, considering its location, infrastructure, and operations.
- Assess the potential impacts of the project on climate change, such as increased greenhouse gas emissions or land degradation.
- Adaptation methods will be identified which include building positioning and design, water management and water conservation strategies.
- Monitoring and evaluation measures will be incorporated within the Construction and Operational EMPr's.

2.10.2 CIVIL AVIATION

2.10.2.1 CIVIL AVIATION ACT, 2009 (ACT 13 OF 2009)

The Civil Aviation Act (Act 13 of 2009) was put in place to ensure effective control and safety in the civil aviation industry and is relevant to the project as such. The Act intends amongst others to "*repeal, consolidate and amend the aviation laws giving effect to certain International Aviation Conventions; to provide for control and regulation of aviation within the Republic; to provide for the establishment of a South African Civil Aviation Authority with safety and security oversight functions; to provide for the establishment of an independent Aviation Safety Investigation Borad (National Aviation Security Program) in compliance with Annex 13 of the Chicago Convention*"; as well as "*to provide for additional measures directed at more effective control of the safety and security of aircraft, airports and the like; and related matters*".

The proposed Vaal Aerodrome will constitute the establishment of a new airport with related ancillary uses and infrastructure and will therefore be subject to the applicable requirements of the South African Civil Aviation Authority (SACAA).

The proposed establishment of the airport will require consideration of civil aviation safety requirements, including the planning and development of aviation infrastructure, aerodrome safeguarding, obstacle limitations, aircraft operations, aviation-related lighting and marking and other requirements applicable to the safe operation of the proposed aerodrome.

The Environmental Impact Assessment process will therefore consider the potential environmental implications associated with the establishment and operation of the airport in conjunction with the applicable civil aviation requirements.

The relevant aviation authorities will be consulted by the proponent during the planning and assessment process to confirm the applicable approvals, licences, technical requirements and safeguarding measures for the proposed development. In addition, the SACAA will be included as a commenting authority in this Scoping and EIA process.

2.10.2.2 CIVIL AVIATION REGULATIONS, 2011

The Civil Aviation Regulation, 2011 and associated Civil Aviation Technical Standards were compiled to fall under the Civil Aviation Act, 2009 and the parts listed below relate, amongst others, to the proposed development and activities. In particular, Part 139 of the Regulations provide a minimum standard and recommended practices on design and operation of aerodromes and heliports. The list below highlights some of the main parts that are relevant to the proposed development:

- General Aviation and Operating Flight Rules.
- Aerodromes and Heliports.
- Airspace and Air Traffic Services.
- Flight Procedure Design.
- Meteorological Information Services.
- Aeronautical Information Services.
- Instrument Flight Procedures, and
- International Civil Aviation Organization (ICAO) Aeronautical Charts.

The SACAA's aviation environmental protection framework specifically includes requirements concerning aircraft noise monitoring, aerodrome environmental programmes and environmental management programmes under Part 139, which states:

Establishment of aerodrome environment management programme

139.02.11 (1) The applicant shall, in the area within its authority and where any foreign object debris (FOD), oil and fuel spillages, bird and wildlife presents or are likely to present a hazard to aircraft

operating to or from the aerodrome, establish an aerodrome environment management programme to minimise the effects of such hazard or potential hazard, taking due cognisance of the provisions of the Environment Conservation Act, 1989 (Act No. 73 of 1989), and the regulations made thereunder.

(2) The aerodrome operator shall ensure that environmental management meeting is conducted with interval not exceeding three months and that

(a) the minutes of the meetings must be kept and must clearly indicate all identified environmental issues that may affect the operations;

(b) the meetings must address all environmental issues within the boundaries of the aerodrome and in the immediate vicinity up to a radius of 10 kilometre that might affect the aerodrome operations negatively.

(c) mitigating measures to rectify all identified environmental issues must be recorded for audit purposes. This includes communication with external parties.

In terms of Part 139.02.13, an application for an aerodrome license, or an amendment thereof, shall be accompanied by (iv) an Environmental Impact Report, if required in terms of the Environmental Conservation Act, 1989 (as replaced by the NEMA, 1998).

Part 13.02.25 requires that the Holder of an aerodrome license shall (a) maintain and comply with the aerodrome environment management program referred to in 139.02.08; and (b) operate the aerodrome in accordance with the provisions of the Environmental Conservation Act, 1989 (as replaced by the NEMA, 1998), and the regulations made thereunder, together with the recommendations and requirements prescribed in any relevant Specifications or Codes of Practice published under the Standards Act, 1993 (Act 29 of 1993).

The required aviation approvals and licences will be pursued separately from, and in conjunction with, the environmental authorisation process. The applicable aviation approvals, together with their respective competent authorities and timing requirements, will be identified in the Environmental Management Programme and/or subsequent environmental assessment documentation. Requirements contained in the CAA, 2009 and CAR, 2011 will be incorporated into the Environmental Management Plan, related to the proposed aerotropolis development.

2.10.2.3 WHITE PAPER ON NATIONAL CIVIL AVIATION POLICY, 2017

The White Paper on National Civil Aviation Policy (NCAP) was developed by the Department of Transport in order to provide a primary framework which will guide all present and future civil aviation developments. The White Paper acknowledges that the present airport infrastructure, with ownership vested in all spheres of government as well as the private and non-profit sector, is an integral part of the South African transport system. This infrastructure contributes to the socio-economic development of the country in terms of direct job creation and economic activity, stimulating economic activity in the wider airport precinct (including

through “airport cities” and “aerotropolises”) as well as by facilitating domestic and international tourism and trade.

“In addition to consideration of environmental impact management and disaster risk reduction, the Wite Paper specifically addresses environmental matters at source, relating to aircraft noise and engine emissions in accordance with ICAO environmental protection goals. The White Paper calls for the establishment of Airport Environmental Committees at those airports that are required to calculate aircraft noise contours and conduct monitoring of aircraft noise; and/or air quality monitoring.”

Strategic objectives of the White Paper, include, *inter alia*:

- To promote and enhance civil aviation safety, security and environmental compliance in all spheres of the civil aviation industry
- To maintain an appropriate and cost -effective regulatory framework, ensuring safe, secure, environmentally friendly and reliable air services, capable of responding to changing circumstances;
- To be environmentally and economically sustainable

The planning related to the proposed Vaal Aerotropolis development has been done in consideration of the context of the objectives and policy principles contained in the White Paper on National Civil Aviation Policy, 2017. Particular consideration has been given to the policy objective of promoting environmentally sustainable aviation development and ensuring that environmental considerations are incorporated into the planning, development, expansion and operation of aviation infrastructure.

The Scoping Report identifies the key environmental issues and potential impacts requiring further investigation during the EIA phase. These include, in this application, aircraft and construction-related noise (Noise Impact Assessment), air quality and emissions (Air Quality Impact Assessment and Climate Change Report), land-use compatibility (Agricultural Impact Assessment), biodiversity (Plant-, Animal-, Avifaunal- and Terrestrial Impact Assessments), water resources (Aquatic and Wetland Impact Assessments), community impacts (Visual Impact Assessment) and cumulative impacts (EIA). The findings of the specialist assessments and stakeholder engagement process will inform the assessment of alternatives, impact significance and mitigation measures. Appropriate mitigation, monitoring and management requirements will subsequently be incorporated into the EMPr and conditions of the Environmental Authorisation, where applicable.

2.10.2.4 THE INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA) - ENVIRONMENTAL POLICY

The International Air Transport Association (IATA) is the international trade association representing the global airline industry, established in 1945. IATA develops industry standards, policies and guidance aimed at promoting safe, efficient, secure and sustainable air transport.

Its environmental policy framework addresses key issues including greenhouse-gas emissions and climate change, sustainable aviation fuels, aircraft noise, local air quality, energy efficiency, waste management and biodiversity. While IATA policies are not generally legally binding, they provide relevant international industry guidance and good practice for assessing and managing the environmental impacts of aviation and airport developments.

The applicable guidelines, standards and recommended industry practices developed by the International Air Transport Association (IATA) will be taken into consideration during the planning and detailed design of the proposed airport development. Where relevant and practicable, the design will incorporate applicable IATA principles relating to environmental sustainability, energy and resource efficiency, greenhouse-gas emissions reduction, sustainable aviation fuels, aircraft and ground-operation efficiency, aircraft noise, air quality, waste management, water use and biodiversity conservation.

The consideration of IATA guidance will support the identification and integration of appropriate environmental mitigation and management measures at the design stage, with the objective of minimising potential environmental impacts and promoting sustainable airport development. IATA guidance will be considered in conjunction with applicable national and local environmental legislation, regulatory requirements, airport design standards and relevant International Civil Aviation Act, 2009 and CAR, 2011 regulations.

2.10.2.5 National Airports Development Plan, 2015

The National Airports Development Plan (NADP, v25 Final) has been initiated by the NCAP as the plan to address the gaps between the current airport network and the future desired state. It guides and supports both overall network planning and the development of individual airports integrated within their broader spatial and transport contexts, in consultation with key airport stakeholders. The regulation is relevant to the project as the infrastructure being developed forms part of the overall airport infrastructure of South Africa.

2.10.2.6 White Paper on National Transport Policy, 2021

The objective of the National Transport Policy (NTP) is to create an environment that supports the development of transport system that encourage economic and environmentally sustainable inclusive growth, and national and regional competitiveness. Key pillars to achieve this are to ensure transport is accessible, cost effective, time efficient and reliable, safe and secure.

In terms of civil aviation, the NTP recognised the need to accommodate for the changing needs and circumstances that may be the result of globalisation, which includes important matters such as liberalisation of air transport, introduction of new technology, greater emphasis on environmental factors and the increased need to regulate Remote Piloted Aircraft Systems (RPAS).

2.10.2.7 NATIONAL TRANSPORT MASTER PLAN 2050, 2011

The National Transport Master Plan (NATMAP) 2050 is the masterplan for transport infrastructure that was created to ensure a sustainable and dynamic system that is well managed and coordinated. The NATMAP 2050, therefore, aims to achieve an integrated, smart and efficient transport system supporting a thriving economy that promotes sustainable economic growth, support a healthier lifestyle, provides safe and accessible mobility options, socially includes all communities and preserves the environment. The NATMAP makes recommendations that are relevant to the development of airports as part of the national transport infrastructure network.

2.10.2.8 CHICAGO CONVENTION, 1944

The Chicago Convention, also known as the Convention on International Civil Aviation, is published in Schedule 3 of the South African Civil Aviation Act No. 13 of 2009. The Chicago Convention established the core principles permitting international transport by air and led to the creation of the ICAO, a specialised agency of the United Nations charged with coordinating and regulating international air travel. The Convention establishes rules of airspace, aircraft registration and safety, and details the rights of the signatories in relation to air travel.

2.10.2.9 INTERNATIONAL CIVIL AVIATION ORGANIZATION

The International Civil Aviation Organization (ICAO) is a specialised agency initiated at the Chicago Convention (1944) with the core function to maintain an expert bureaucracy between the nation interacting through the aviation industry, and to research new standards and innovations in the industry. The proposed development will be planned and designed to comply with the standards and recommended practices set out by ICAO. Of particular importance in the planning and design of airports are the ICAO Annex 14, DOC 9184 - Airport Planning Manual and DOC 9157 - Aerodrome Design Manual.

2.10.3 PROVINCIAL GUIDELINES AND PLANS

In addition to the above, the following provincial guidelines and plans have been taken into account:

2.10.3.1 THE GAUTENG SPATIAL DEVELOPMENT FRAMEWORK, 2030

The Gauteng Spatial Development Framework (SDF), 2011 was amongst others, compiled to specify a clear set of spatial objectives for municipalities to achieve, to ensure realisation of the future provincial spatial infrastructure and to enable and direct growth.

The SDF aims to articulate the spatial objectives within Gauteng. The Gauteng SDF, 2011 was later succeeded by the SDF, 2030, and was compiled to specify a clear set of spatial objectives for municipalities to achieve, to ensure realisation of the future provincial spatial infrastructure, and to enable and direct growth. The SDF aims to articulate the spatial objectives of the Gauteng region to assist the alignment of neighbouring municipalities' spatial plans.

The Gauteng Spatial Development Framework (GSDF) 2030 plays a direct structural role in guiding the development of the newly designated Vaal Special Economic Zone (SEZ) and its anchor urban nodes, notably Vanderbijlpark (Emfuleni SDF, 2023-2024, discussed under 2.10.4.4 below).

2.10.3.2 GAUTENG CONSERVATION PLAN VERSION 4

The Gauteng Conservation Plan Version 4 (2024) is a strategic, science-based spatial planning tool developed by the Gauteng Department of Agriculture, Rural Development and Environment. It aims to identify and prioritize areas critical for biodiversity conservation and ecological sustainability across the province. The plan supports informed decision-making in land use, environmental assessments, and development planning.

C-Plan v4 uses systematic conservation planning and GIS analysis to map and classify land into categories based on biodiversity value and ecological function. These include Protected Areas (PA), Critical Biodiversity Areas (CBA1 and CBA2), Ecological Support Areas (ESA1 and ESA2), and Other Natural Areas (ONA). Each category is accompanied by specific land use and management guidelines to ensure the protection of ecological infrastructure and ecosystem services.

The plan is widely used by government departments, municipalities, developers, consultants, and conservation organizations. It plays a key role in guiding protected area expansion, supporting biodiversity stewardship, and informing EIAs. Ultimately, C-Plan v4 helps balance development needs with the requirement to conserve Gauteng's natural heritage and meet national and international biodiversity commitments.

2.10.3.3 THE GAUTENG PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK (GPEMF) AND ADOPTION OF THE GAUTENG PROVINCIAL ENVIRONMENTAL FRAMEWORK STANDARD AND EXCLUSION OF ASSOCIATED ACTIVITIES FROM THE REQUIREMENT TO OBTAIN ENVIRONMENTAL AUTHORISATION IN TERMS OF SECTION 24(2)(D) AND 24(10)(A) READ IN CONJUNCTION WITH SECTION 24(1)(D) OF NEMA, 1998 FOR THE IMPLEMENTATION OF THE GAUTENG PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK (GN 164 OF 2 MARCH 2018)

The GPEMF is a legal instrument in terms of the Environmental Management Framework Regulations, 2010. The purpose of the regulations is to assist environmental impact management including EIA processes, spatial planning and sustainable development.

The objective of the GPEMF is to guide sustainable land use management within the Gauteng Province. The GPEMF, *inter alia*, serve the following purposes:

- To provide a strategic and overall framework for environmental management in Gauteng.
- Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng.
- Determine geographical areas where certain activities can be excluded from an EIA process; and
- Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making.

The GPEMF Standard, 2018 provides for a number of activity exclusions in certain zones (for example, Zone 1 and Zone 5). The aim of this is streamline development in areas that are earmarked for development. In this way, the Standard promotes densification and infill.

Most of the proposed development site occurs in Zone 4: Normal Control Zone whilst part of the site around the watercourse does fall within Zone 3 (High control zone outside the urban development zone). The GPEMF Standard, 2018 therefore does not apply. No activities are therefore excluded (presently).

2.10.4 MUNICIPAL BY-LAWS AND PLANS

Several by-laws have been published by the Emfuleni Local Municipality to provide a framework for its operation and management. The proposed development must comply with applicable Emfuleni Local Municipality by-laws which may include, but not be limited to:

2.10.4.1 EMFULENI LOCAL MUNICIPALITY SPATIAL PLANNING AND LAND USE MANAGEMENT BY-LAW, 2018

The Emfuleni Local Municipality Spatial Planning and Land Use Management By-Law, 2018 is aimed at providing for the effective administration of “municipal planning” in the area of Emfuleni Local Municipality. No person may use or develop land unless the use or land development is permitted in terms of the

Municipality's land use scheme or an approval in terms of the By-Laws. Thereby, in line with Section 44 of this by-law, a township establishment application is being prepared and will be submitted for the establishment of the proposed Vaal Aerotropolis on various Portions of Klipkop 530 IQ, various Portions of Rietkuil 554 IQ, various Portions of Vlakplaats 555 IQ, within Emfuleni Local Municipality, Gauteng.

2.10.4.2 EMFULENI LOCAL MUNICIPALITY SOLID WASTE MANAGEMENT BY-LAW, 2017

The objectives of the solid waste management by-laws are to:

- Give effect to the right contained in the Constitution by regulating waste management within the area of the municipality's jurisdiction.
- Provide an effective legal and administrative framework, within which the municipality can manage and regulate waste management activities.
- Ensure that waste is avoided, minimised, reused, recycled, recovered, and disposed of in an environmental sound manner.
- Promote and ensure an effective delivery of waste services.

2.10.4.3 EMFULENI LOCAL MUNICIPALITY: WATER AND SANITATION BY-LAW, 2004

This by-law prescribes and elaborates on the use and related activities of water and sewer in the Emfuleni Local Municipality and must therefore be considered during any EIA process in the area.

The by-laws note that should an EIA be required before the provision of services can be approved, the applicant will be responsible for carrying out such EIA. It also notes that once environmental approval has been granted and the provision of water services has been approved by the Municipality, it is the responsibility of the applicant to ensure that all laws and conditions affected by the provisions of water services and relating to environmental management and control are complied with.

The by-law also provides requirements for the use of boreholes, storage tanks, discharge into wastewater, treatment of sewerage, and stormwater. The applicable services for the proposed development will be put in place.

2.10.4.4 EMFULENI SPATIAL DEVELOPMENT FRAMEWORK, 2023 - 2024

The Emfuleni Spatial Development Framework (SDF) has been developed with the following objectives:

- To provide a strategic development vision for Emfuleni in line with the EGDS and the IDP,
- To draft a comprehensive SDF for Emfuleni,
- To address specific development issues and challenges in Emfuleni,
- To provide a strategic context for the integration and implementation of existing studies applicable to Emfuleni,
- To identify specific interventions to realise the vision, and
- To ensure sustainable integrated development

The proposed development is in line with the Emfuleni SDF (2024) as it is located within the area designated for the development of an Aero city (**Figure 2-2**). The study area is located west of the N1, with the Industrial area of Vanderbijlpark to the east. The P24 (R54) forms the southern boundary or the proposed study area.

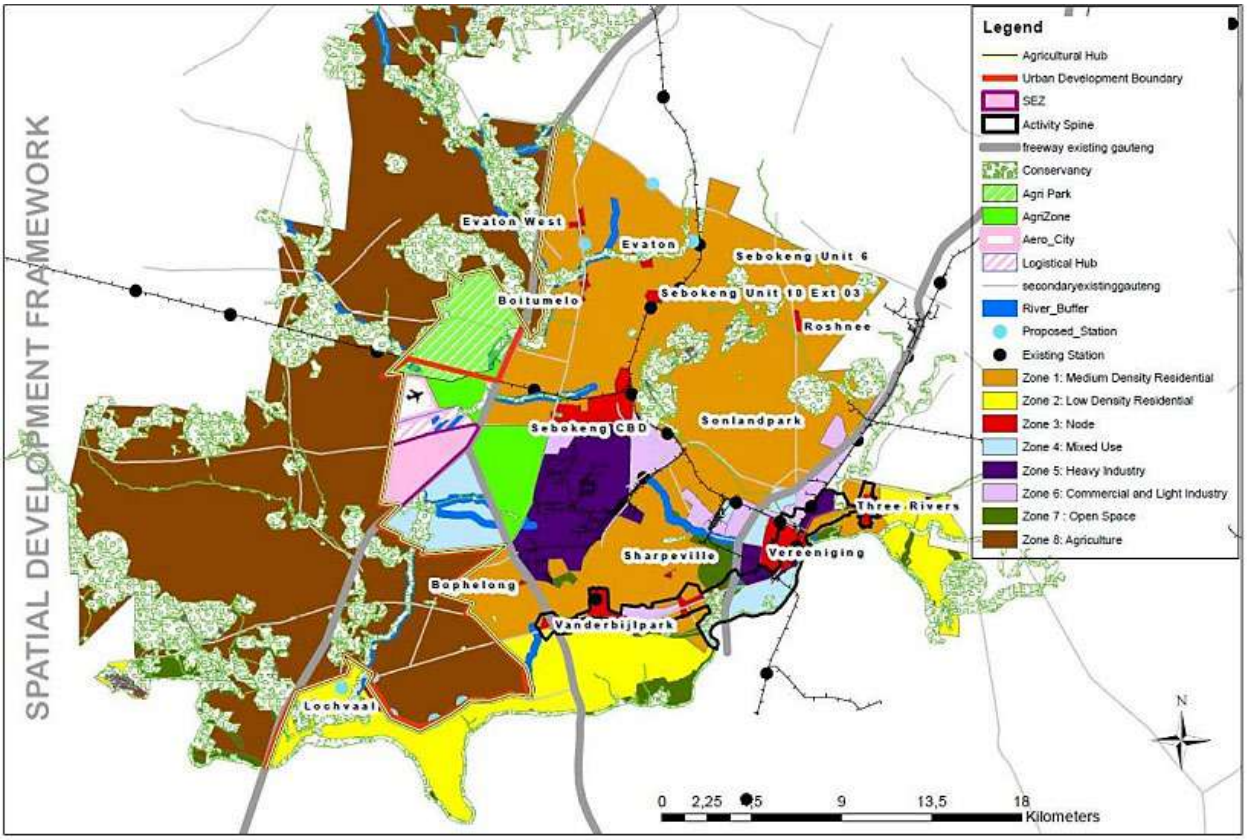


FIGURE 2-2: EMFULENI SDF (PROPOSED AEROTROPOLIS INDICATED ON MAP), 2024

The aim of the proposed international airport as part of the Aerotropolis is to supplement the Logistics Hub proposed as part of the regeneration of the Emfuleni area, and to relieve the OR Tambo International airport and Rand Airport from the growth constraints they are currently experiencing. Estimates show that the OR Tambo International Airport and Rand Airport are experiencing cargo and passenger growth rates that are unlikely to be satisfied by the future expansion plans of these airports. These expansion plans cannot be amended due to land and infrastructural constraints surrounding these airports. These constraints present an opportunity for the development of a regional airport in Emfuleni, to capture some of the growth potential experienced by the mentioned airports.

Emfuleni local Municipality has reached an agreement with a few other role players, such as Transnet, Arcelor Mittal and the Gauteng Department of Economic Development, that a logistical hub in Emfuleni be considered as an important flagship project within the Vaal region. The Gauteng Provincial Government will need to designate the proposed Logistical Hub a Special Economic Zones (SEZ) to increase the potential of this Hub being realized. The potential components of the Logistics Hub include a Transnet container depot, an Industrial Development Zone, an airport, warehouses and storage Facilities, and Intelligence Information Infrastructure.

The proposed Vaal Logistical Hub is expected to provide O.R. Tambo with a suitable regional logistic facility to the mutual benefit of both Emfuleni and Ekurhuleni Municipalities. In addition, the logistical hub will contribute to improving burdening transport costs and traffic congestions, make Emfuleni more attractive to local and foreign investments, and create employment opportunities which may have otherwise not been realized.

Potential benefits of the Aerotropolis:

- It will attract new investment and have a positive impact on the socio-economic development of the Vaal region.
- It will diversify and grow the Vaal economy.
- It will create job opportunities that will address unemployment in the Vaal region.
- It will afford local people the opportunity to participate in the economy through business partnering, business establishment, training, and skills development.
- It will create a greater demand for Arcelor Mittal's manufacturing output.
- The location of the Logistics Hub at Arcelor Mittal will help minimize transport cost of materials.
- It will create various opportunities for BBBEEE and SMME's within the Vaal region; and
- Kick-start downstream manufacturing in Emfuleni.
- Reduce transport costs of goods from areas surrounding the airport and enhance tourism opportunities within the Vaal region. (Emfuleni SDF, 2023-2024).

3. DESCRIPTION OF THE RECEIVING ENVIRONMENT

3.1 LOCAL CLIMATE

3.1.1 OVERVIEW

A review of the local climate is undertaken to establish the prevailing climatic conditions within the study area and to identify climatic factors that may influence the proposed airport development.

The review will also provide a basis for considering climate-change risks and the resilience of the proposed airport infrastructure to projected changes in climatic conditions. The findings will therefore be used to inform the design, impact assessment and development of appropriate mitigation and management measures specifically related to the proposed aerotropolis development.

The climatological data for the Vanderbijlpark area is discussed below.

3.1.1.1 TEMPERATURE

Between the period of 2009 and 2023, the average recorded temperatures ranged from 16°C (average minimum) to 28°C (average maximum) (**Figure 3-1**).

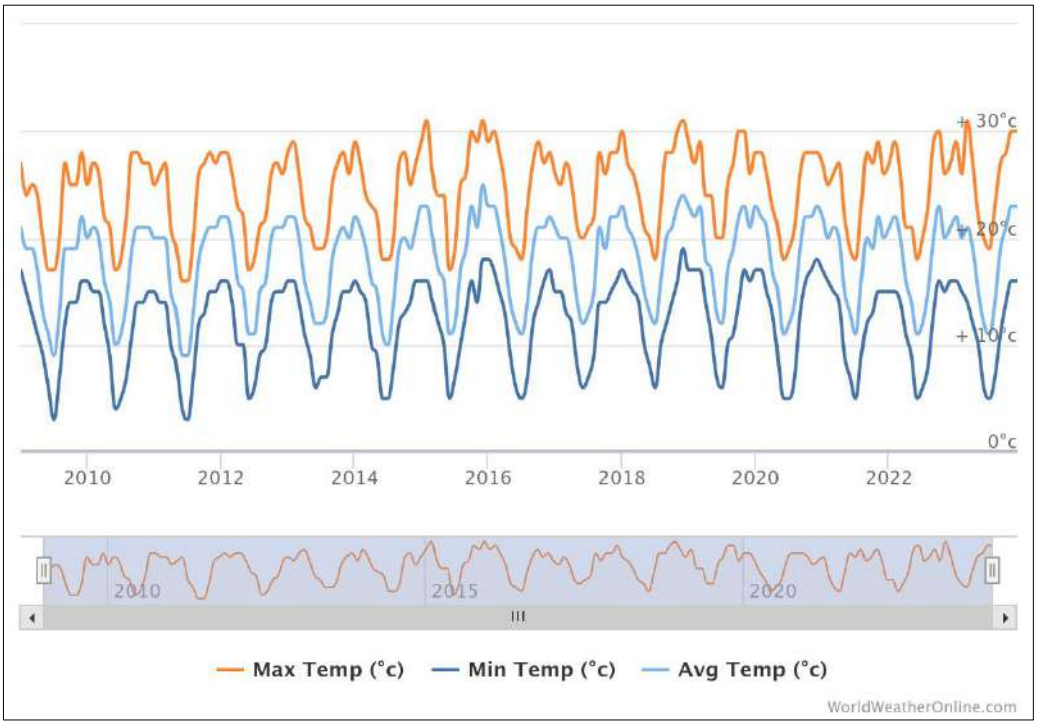


FIGURE 3-1: AVERAGE TEMPERATURE DATA FOR VANDERBIJLPARK (WORLD WEATHER ONLINE)

3.1.1.2 RAINFALL

Between the period of 2009 and 2022, the average annual rainfall in the area ranged from 0mm (usually July and August) to 143mm (usually December and January) (**Figure 3-2**).

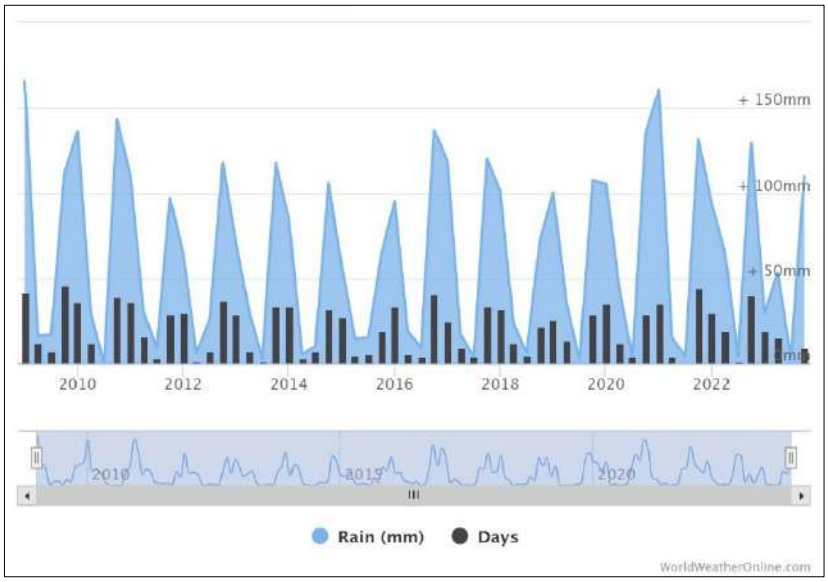


FIGURE 3-2: AVERAGE RAINFALL DATA FOR VANDERBIJLPARK (WORLD WEATHER ONLINE)

3.1.1.3 WIND

The Wind Rose below shows that the predominant wind direction as received from the South African Weather Service as measured at the weather station in Vereeniging approximately 23km from the study area. Wind in the area predominately blows from the north-west direction with windspeeds ranging from 0.1m/s to 11m/s (**Figure 3-3**).

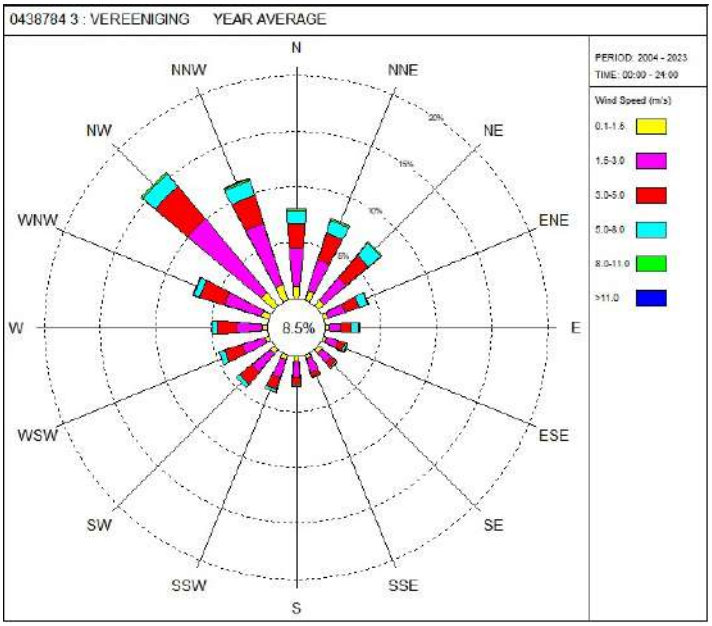


FIGURE 3-3: WIND ROSE FOR THE VEREENIGING AREA (SOUTH AFRICAN WEATHER SERVICE, 2024)

3.1.2 IMPLICATIONS

The proposed airport development has the potential to result in localised changes to microclimatic conditions through changes in land cover, vegetation clearance and the introduction of extensive impervious surfaces and built infrastructure. In particular, increased areas of paved surfaces may contribute to localised increases in surface temperatures, while buildings and other airport infrastructure may modify near-surface airflow and wind conditions.

The development is not anticipated to materially influence regional climatic conditions or prevailing rainfall and wind patterns. However, localised changes in surface characteristics may influence stormwater runoff, heat retention and micro-scale airflow. These potential effects will be considered during the assessment, particularly in relation to climate resilience, stormwater management, air quality and the design of airport infrastructure.

Similarly, the local and regional climate is an important consideration in the planning and design of the proposed airport, as climatic conditions may influence the safety, functionality, durability and long-term resilience of the airport. Wind direction, rainfall and temperature data will inform the design of appropriate stormwater management systems and infrastructure to ensure that the proposed airport is appropriately adapted to anticipated climatic conditions.

A Climate Change Impact Assessment will be completed as part of the EIA, to assess the anticipated impact of the proposed airport on the local climate.

3.2 TOPOGRAPHY

3.2.1 OVERVIEW

The site is located within the Vaal-Orange Catchment (Quaternary Catchment C22J) between two perennial water courses namely the Leeuspruit, located along the northeastern portion, and the Klein Rietspruit, a tributary to the Rietspruit River, along the southwestern portion of the study area. The confluence of the Leeuspruit and the Rietspruit is located southeast of the study area.

The topography of the study area is undulating with the altitude ranging from 1500 meters above sea level (masl) in the northwest to 1450 masl in the southeast. The predominant slope of the study area ranges from 0.83% in the valley to 35.23% for some structures along the railway; with the average slope being 1.01% (**Figure 3-4**). The undulating terrain of the study area provides for the development of an interconnected airport platform which easily connects to the Aero City and Agri Zones.

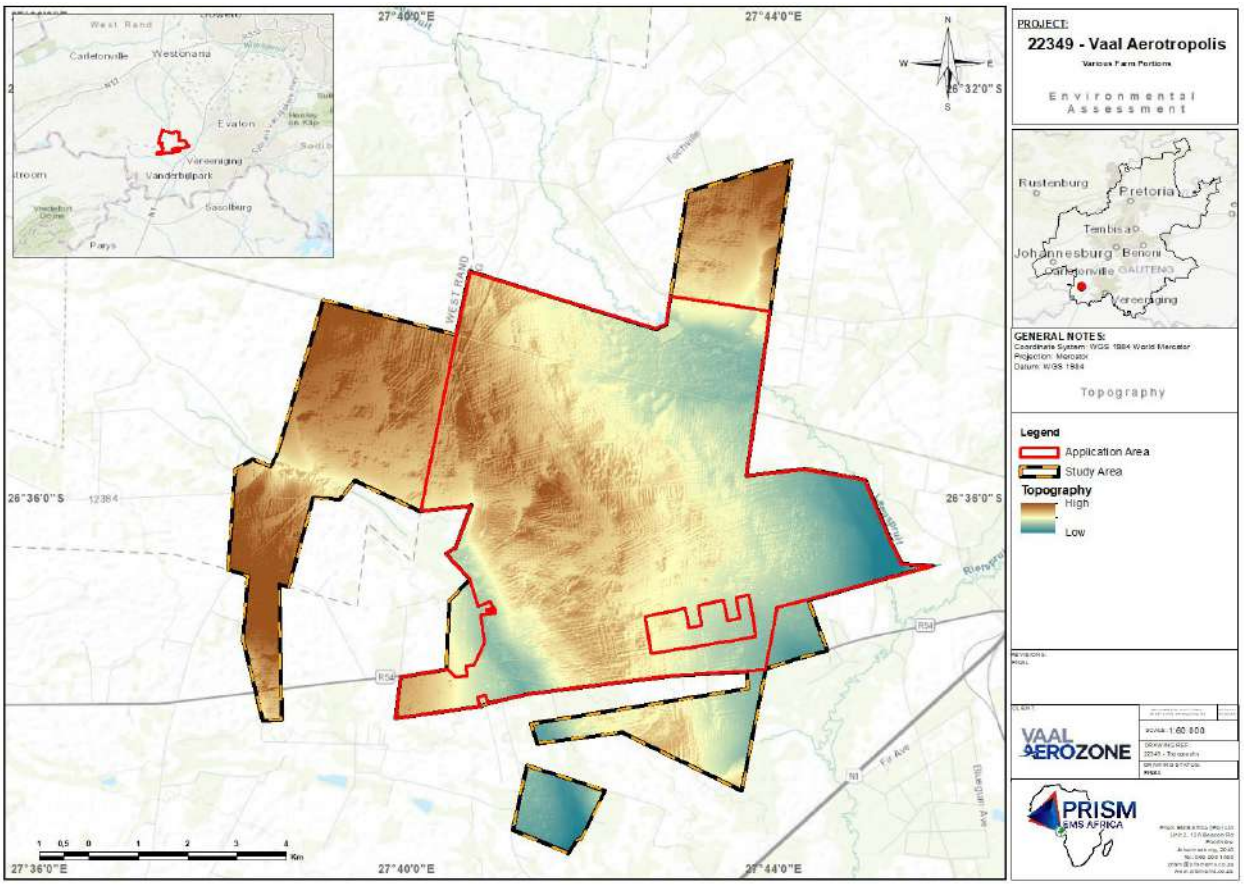


FIGURE 3-4: TOPOGRAPHY OF STUDY AREA

3.2.2 IMPLICATIONS

The development of the proposed airport has the potential to result in permanent localised changes to the existing topography, primarily as a result of site preparation, earthworks, excavation, filling and grading required to accommodate the runways, taxiways, aprons, terminal facilities and associated infrastructure.

Mitigation measures to ensure management of erosion and preservation of topsoil will be included in the Environmental Management Program (EMPr). In addition, a Stormwater Management Plan is being developed which will take into account the topography of the area. Stormwater attenuation as well as the implementation of the necessary aquatic resource's rehabilitation will form an integral part of this project.

3.3 GEOLOGY AND SOILS

3.3.1 OVERVIEW

The study area is underlain by quaternary sedimentary deposits overlying the older Transvaal Supergroup. These quaternary sedimentary deposits predominantly consist of alluvial and colluvial deposits.

The Transvaal Supergroup rocks were intruded by the Bushveld Igneous Complex with the Magaliesberg formation from the Pretoria Group forming the floor. The regional area is characterised by the Magaliesberg

formation. The Magaliesberg formation formed from shallow marine and sandy coastline regressive system and formed sandstone. The post-Magaliesberg formation consists of quarzitic sandstone and shale. The Transvaal Supergroup overlies the older Witwatersrand and Ventersdorp Supergroups. Various geological formations and groups make up the Transvaal Supergroup. The formations and groups include the Black Reef, Chunniespoort and Pretoria groups. Associated with these groups are the Silverton, Magaliesberg and Daspoort formations. The Magaliesberg formation consists of sandstone with mudrock lenses, the Silverton formation consisting of carbonate rocks and shale and the Daspoort consists of sandstone and mudrocks. These formations characterise the study area.

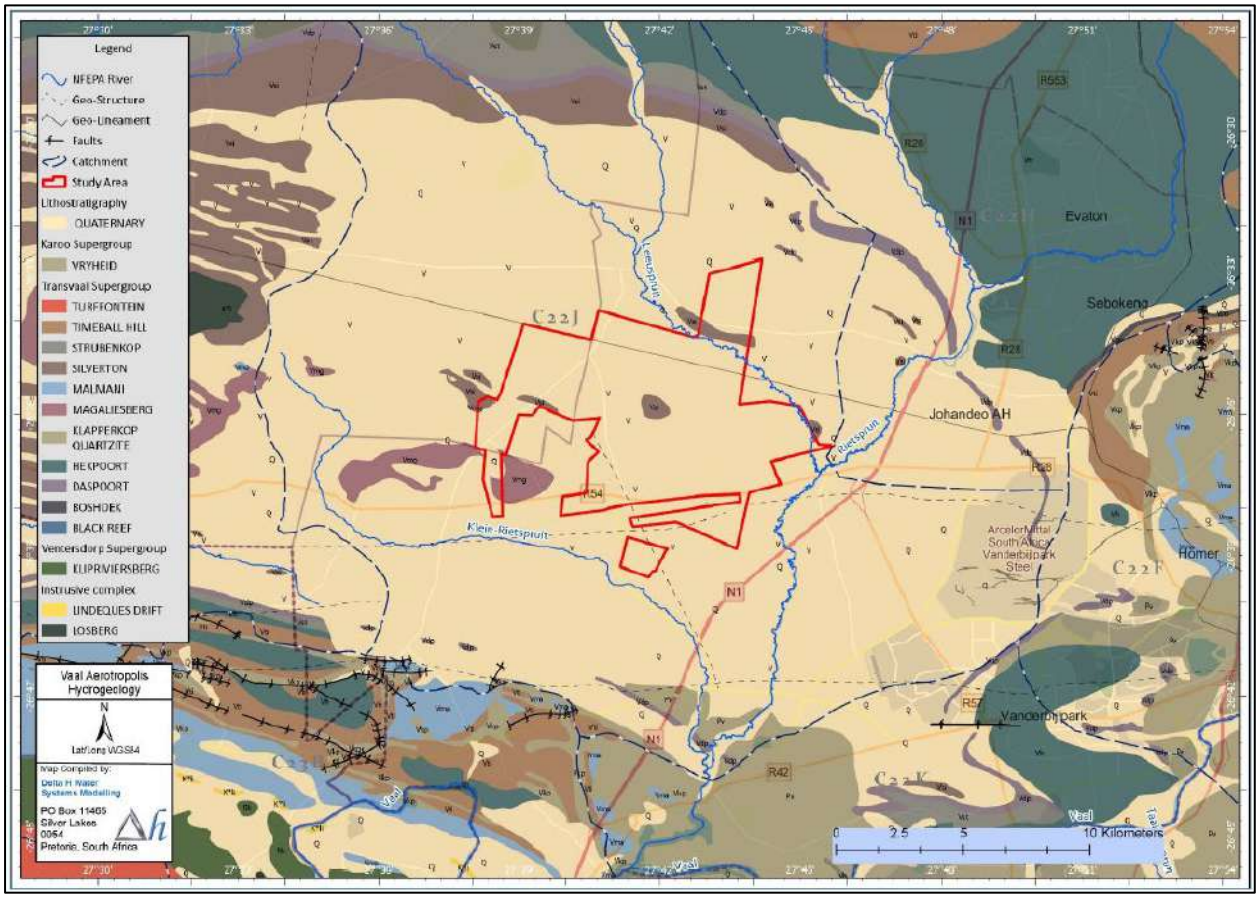


FIGURE 3-5: REGIONAL GEOLOGY (DELTA H WATER SYSTEMS MODELLING, 2024).

According to **Figure 3-6** the soils found in the study area are predominantly red, yellow and/or greyish with low to medium base status. These soils are also associated with plinthic horizons. The soils have a high agricultural potential, especially for annual dry-land or rainfed crops.

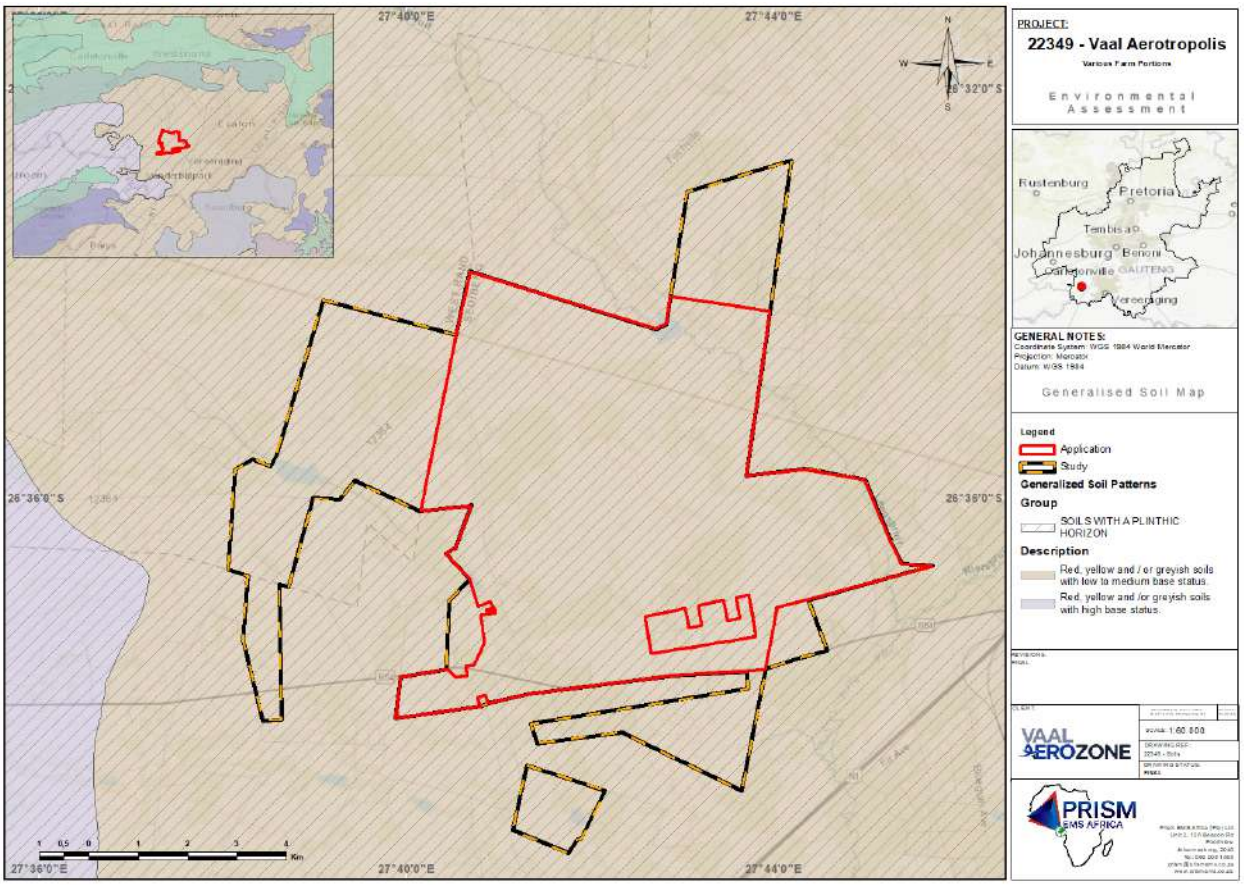


FIGURE 3-6: GENERALISED SOIL MAP (SCHULZE, 2006)

3.3.2 IMPLICATIONS

Several specialist studies, including a Geohydrological Assessment and a Hydropedological Assessment will be undertaken and included in the EIA Report. These assessments will include in-depth desktop assessment as well as site visits to allow for better understanding of the site and its associated geology / soils. Data collected will be mapped, modelled and reported to determine vulnerabilities and sensitivities which will be used to advise stormwater designs, foundations and services. The EMPr will also include measures to mitigate impacts identified during the assessments.

3.4 LAND USE

3.4.1 OVERVIEW

Land use in the study area, presently, is predominantly agricultural and consists of cultivated land, pastures for livestock and some farmhouses with outbuildings for residents.

Various streams and wetlands were also observed on site. The Rietspruit river flows between the study area and the N1 east of the subject study area. Furthermore, the Leeuspruit stream flows through the study area north of the Transnet rail line (northern portion of the development site), and the Klein Rietspruit stream

flows from the west to the east just north of the P24(R54) on the subject site. Site photographs are provided in **Figure 3-7** below, displaying current land-uses on the site.

A) AGRICULTURAL USES

B) WETLANDS AND STREAMS ON SITE

C) DRONE IMAGERY OF STUDY AREA

D) SOME BUILDINGS AND HOUSES LOCATED ON SITE

FIGURE 3-7: SITE PHOTOGRAPHS

3.4.2 IMPLICATIONS

The proposed airport will result in a change in land use from predominantly agricultural activities to aviation-related, commercial, transport and associated infrastructure uses. This represents a permanent transformation of the existing agricultural land within the development footprint, with potential implications for agricultural production, surrounding land-use patterns and existing land-based livelihoods. However, the proposed development is aligned with the Emfuleni Spatial Development Framework (SDF), which has earmarked the area for airport development.

In addition, and in an effort by the applicant to mitigate the loss of agricultural land; as is evident from the Development Plans illustrated in **Figure 1-1** to **Figure 1-4** above, the proposed Vaal Aerotropolis development incorporates an **extensive Agri-Zone**, as an integral component of the Aerotropolis development – from the first Phase of development. The Agri-Zone will be focused on production of high-

value agricultural products amenable for transport by air, and planning is for export of these products to the rest of the world, via the cargo terminal.

The proposed Agri-Zone is envisaged as a high-technology agricultural cluster, incorporating climate-controlled growing facilities, including greenhouses and hydroponic production systems, and is anticipated to become one of the largest climate-controlled agricultural production areas in Africa. An integrated perishable supply chain is proposed, incorporating associated logistics and storage infrastructure. The development proposal further provides for a state-of-the-art tissue culture facility and a dedicated live-animal holding facility, intended to facilitate the transportation of live animals by air.

The existing land use and status of the environment will be taken into account and explored in more detail during the EIA Phase through the inclusion of the various specialist studies that aim to take into account the conditions of the site. A Site Verification Assessment in unison with the National Web based Environmental Screening Tool is also appended in **Appendix E** and specifically assesses the current site conditions.

3.5 EXISTING ACCESS ROADS

3.5.1 OVERVIEW

The proposed Vaal Aerotropolis will be located approximately 10km west of the N1 highway, and the site is bordered by the P24/1 (R54) which runs along the boundary of the study site on the south. To gain access to the current study site, various unpaved roads which can be seen in **Figure 3-8**, can be used from the P24/1 (R54). Furthermore, the K170 (D1017) road is located north of the site and can provide access from the north through a series of unpaved roads. To accommodate the proposed Aerotropolis, various road upgrades and re-alignments are planned for the area. For more information in this regard, refer to Section 4.1.6.2.

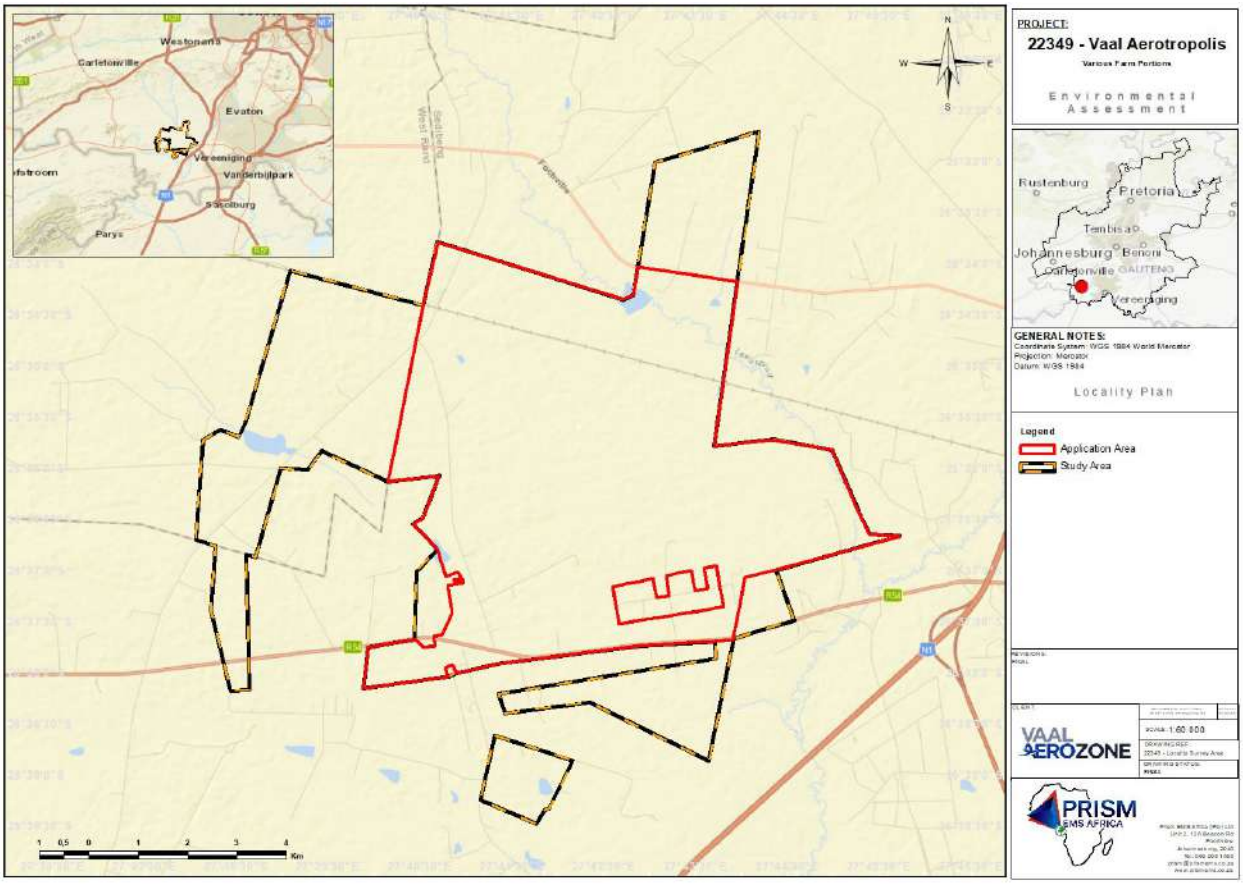


FIGURE 3-8: LOCALITY MAP OF SURVEY AREA

3.5.2 IMPLICATIONS

A detailed Transportation Impact Assessment (TIA) has been undertaken and will be included in the EIA Report. This will ensure that suitable access and roads exist to cater for the proposed development. All planned future routes will be considered and implemented within the development layout plan.

3.6 EXISTING SERVICES

3.6.1 OVERVIEW

Due to the rural nature of the site, there are currently no bulk sewer, water, stormwater or roads infrastructure in the area. The Emfuleni municipal supplies (water, sewer, and electricity) are currently restricted to the municipality's operational, more urban zones; east of the N1 highway. Boreholes are presently utilised by residents as a source of water for domestic and agricultural purposes. Sewer services in the area are, mostly, in the form of septic tanks and French drains, while electricity is available via direct ESKOM connections. Access roads are mainly in the form of provincial roads and/or secondary (i.e., gravel) roads.

3.6.2 IMPLICATIONS

All the above-mentioned services will need to be expanded, upgraded and/or constructed in order to meet the needs of the project. Various alternatives are also being considered; refer to Sections 4.1.6 and 6.2 for more information in this regard.

3.7 AGRICULTURAL POTENTIAL

3.7.1 OVERVIEW

Agricultural potential can be defined as "*Land that has the soil and terrain quality, growing season, and available moisture supply needed to produce sustained high yield of crops economically when treated and managed according to best possible farming practices*".

For purposes of the Gauteng Agricultural Potential Atlas V (GAPA), land capability was used to identify and map high potential agricultural land. Agricultural land capability is the total suitability of land for use, in an ecologically sustainable way, for crops, grazing, woodland or for wildlife.

According to the Gauteng Agricultural Potential Atlas IV and the National Screening Tool, the site has **moderate to high** agricultural potential and sensitivity (**Figure 3-9**). However, in terms of the updated Gauteng Agriculture Potential Atlas V, significantly smaller areas of the subject site are indicated as High Potential Agricultural Land (**Figure 3-10**).

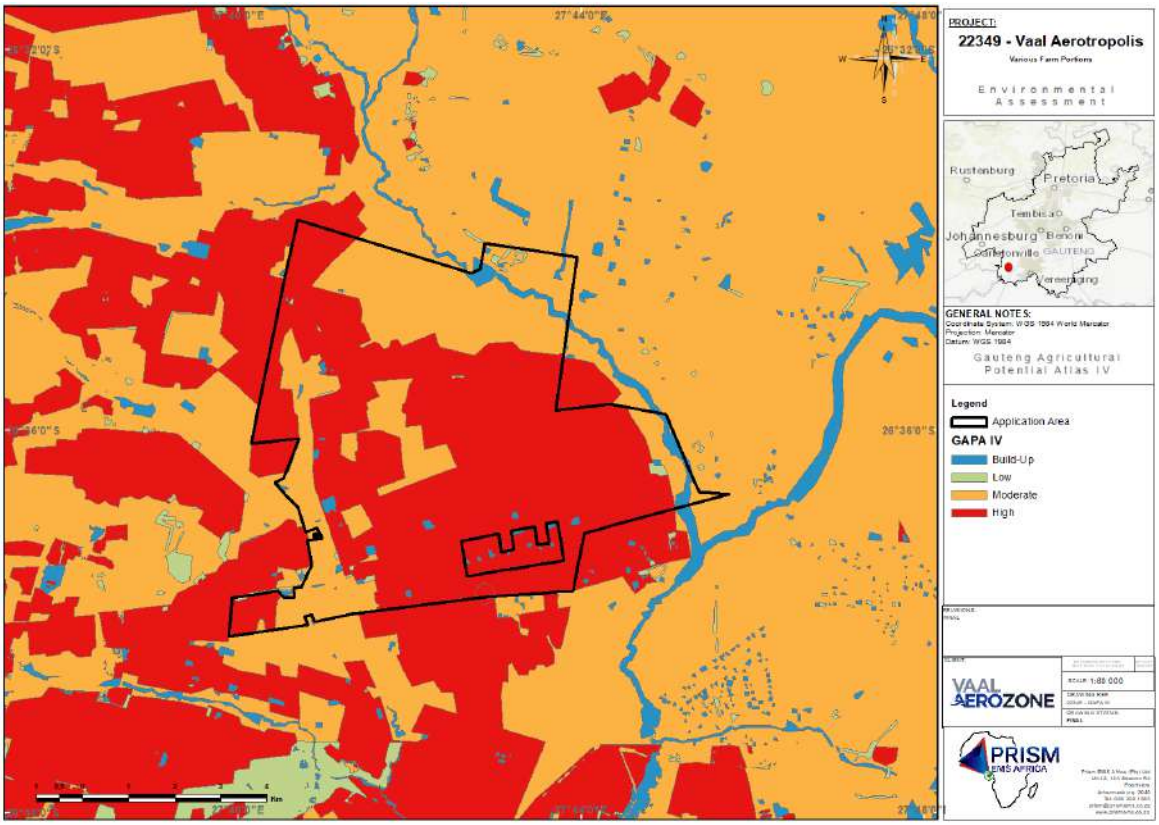


FIGURE 3-9: GAUTENG AGRICULTURAL POTENTIAL ATLAS-IV

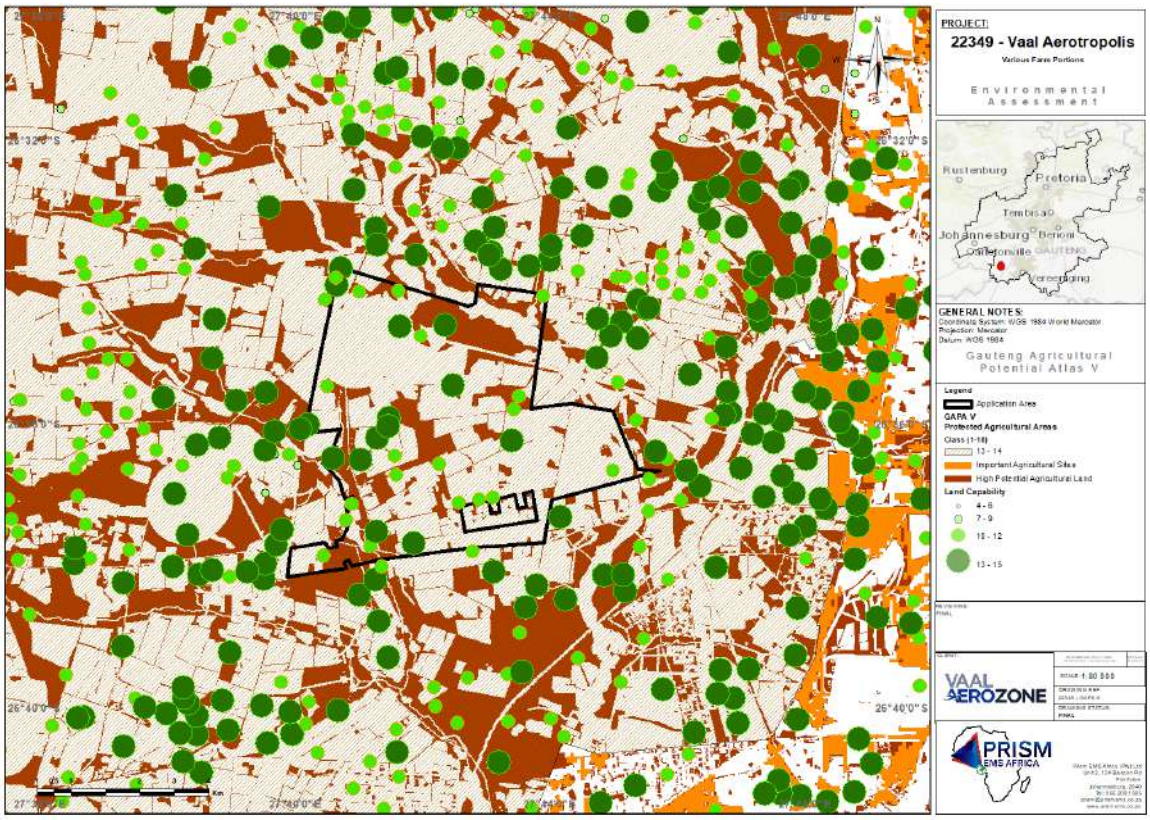


FIGURE 3-10: GAUTENG AGRICULTURAL POTENTIAL ATLAS-V

3.7.2 IMPLICATIONS

As the site verification assessment and GAPA V information suggests a moderate to high agricultural potential, an Agricultural Assessment will be undertaken and included in the EIA Report.

Digital Soils Africa has been appointed to conduct the Agricultural Assessment as well as a Hydropedology Impact Assessment. The purpose of this report will be to confirm the agricultural potential status of the site. The assessment will include an in-depth desktop study which will be confirmed with site assessments and soil classification and analysis.

3.8 SOCIO-ECONOMIC ENVIRONMENT

The application area related to Phase 1 (this application) of the Vaal Aerotropolis development is located within the Emfuleni Local Municipality, Sedibeng District Municipality.

3.8.1 OVERVIEW

According to Census 2022, Emfuleni Local Municipality has a total population of 945 650 of people, of which 90.9% are black African, 7.2% are white, 1.0% are coloured, and 0.7% are Indian / Asian. Of those aged 20 years and older, 2.6% have completed primary school, 32.8% have some secondary education, 41.6% have completed matric, and 12.8% have some form of higher education (**Figure 3-11**). The development of the Vaal Aerotropolis in Emfuleni is an initiative that aims to promote economic development within the Emfuleni and Sedibeng municipal areas. Economic benefits include, but are not limited to, anticipated increases in property value but also the creation of future revenue streams in terms of rental and future dividends. Income, in the form of municipal rates and taxes from the Vaal Aerotropolis Development, will also contribute to the growth of the Emfuleni Municipality economy.

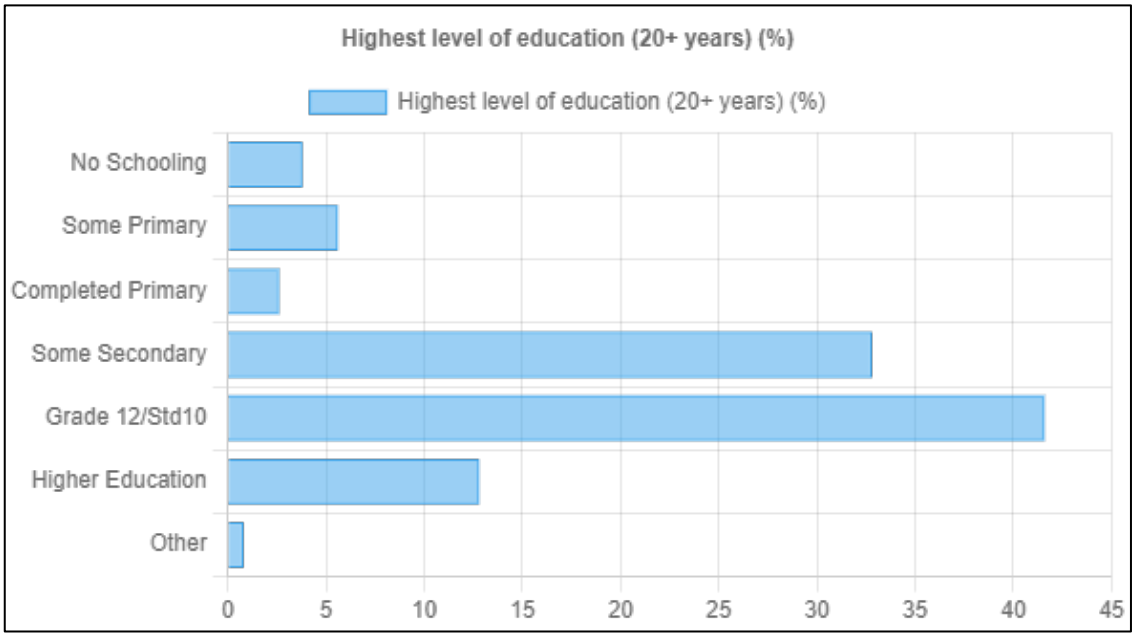


FIGURE 3-11: HIGHEST LEVEL OF EDUCATION IN EMFULENI (STATISTICS SA, ACCESSED 2022)

In terms of household number and size, there are 297 910 households in the Emfuleni municipality with an average of 3,2 persons per household. A total of 80,4% households in the Emfuleni municipality have access to piped water in their dwelling, 16,7% have water in their yard, and only 0,7% of households do not have access to piped water.

In the Sedibeng District municipality, 9% of the population has no income, according to the Emfuleni Local Municipality IDP of 2022-2023. In addition, according to Census 2011 data, 61% of the population of Emfuleni Local Municipality are economically active (employed), and 33% are unemployed.

In terms of the Vaal Aerotropolis itself, the total estimated CAPEX for construction (Phase 1) is anticipated to be R29.1 billion. The number of new enterprise opportunities of the project during the construction phase is estimated at R82.2 billion for additional business sales, and R36.1 billion for additional GDP. Additionally, 118 498 formal and informal jobs will be created of which an estimated 22.9% of jobs will be skilled, 58.5% will be semi-skilled, and 18,5% will be unskilled.

The total estimated OPEX for operational aspects (Phase 1) is anticipated to be R7.7 billion. In terms of new enterprise opportunities during operational phase, a total of R19.7 billion is anticipated for additional business sales and R9.3 billion for additional GPD. In addition, 19 838 formal and informal jobs will be created with an estimated 28.2% of these jobs being skilled, 49.0% semi-skilled and 22.8% low skilled.

3.8.2 IMPLICATIONS

The National Airports Development Plan, 2024 was designed to eliminate poverty, unemployment and reduce inequality in relation to the country's airport network, by 2030. The Plan has highlighted structural weaknesses to overcome, including poor transport links and infrastructure which raise the cost of doing business and hamper both trade and investment. The Integrated Urban Development Framework, which draws from the National Spatial Development Framework, states that integrated transport and mobility is a vital component of South Africa's economic infrastructure investment. Airports have been shown to contribute to socio-economic development in a range of ways, including improving accessibility for people to geographical areas, whether for personal, essential services, trade, business or tourism reasons. Ultimately, an airport contributes towards the image of the country.

A Spatial Development Framework (SDF) is a strategic planning tool that is used by government to guide and coordinate future land use, economic growth and infrastructure investment in municipal, national or provincial areas. On 29 January 2026 approval was received for the Vaal Aerotropolis Local Spatial Development Framework as contemplated in Section 20 of the Spatial Planning and Land Use Management Act, (Act 16 of 2013) (SPLUMA). The approved Vaal Aerotropolis Local Spatial Development Framework (VA LSDF) was Gazetted on 18 March 2026 (Local Authority Notice 252 of 2026) and incorporated into the Emfuleni Spatial Development Framework (SDF).

3.9 TOURISM

3.9.1 OVERVIEW

According to the Emfuleni Local Municipality SDF, 2024 the tourism sector in Emfuleni is currently a relatively small part of the local economy. A wide range of tourist facilities are found within Emfuleni which includes bed and breakfast accommodation, guesthouses, hotels and tourist information centres. Furthermore, Emerald Resort & Casino is a significant tourist attraction and can be considered a provincial tourist destination in terms of size. The Vaal River is the most significant tourist attraction within the Emfuleni Local Municipality as it is an important short-stay holiday destination.

The Sharpeville Memorial Initiative, with it being the location of the signing of the Constitution, has the potential to attract both visitors and tourists from Gauteng as well as abroad. Emphasis should therefore be placed on the development of this historical site in such a manner that will draw day visitors and overseas tourists.

Heritage areas in the broader Sedibeng area include the Redan Rock Art and Iron Ages Site, which include rock engravings and evidence of Late Iron Age Settlements, providing both cultural and archaeological tourism potential.

3.9.2 IMPLICATIONS

The development of an international airport in South Africa is guided by the National Ministry of Transport. Its Revised Strategic Plan 2020-2025 defines the manner in which future international airports within South Africa are to be developed.

The report states under Aviation Infrastructure *"An integrated airport network system has the potential to support the NDP's objective by contributing to growing the economy of the country and ensure that potential investments are utilised effectively and efficiently through economic initiatives such as the aerotropolis concept, airport cities, Special Economic Zones (SEZ's) linked to international airports aimed at promoting economic growth, trade and tourism and job creation. It could further facilitate the expansion of tourism, including sport and adventure tourism. However, such initiatives must be sustainable to ensure economic growth within the country."*

The proposed Vaal Aerotropolis, which is planned to include among others, an airport city containing a hotel and entertainment centre, will expand into the tourism sector and will complement and contribute to the tourism of Emfuleni and South Africa as a whole. It is anticipated that the airport would contribute to recreational tourism (Vaal River, boating, fishing, etc), Heritage- and cultural tourism, and nature- and outdoor tourism, due to the nature parks and scenic areas in the vicinity – to incorporate all the tourism nodes as identified in the Emfuleni SDF.

3.10 BIODIVERSITY

3.10.1 OVERVIEW

A number of documents were assessed to understand the current status of the biodiversity on site from a desktop perspective. These are discussed in the subsections below and also guided the identification of necessary specialist studies.

3.10.2 GAUTENG CONSERVATION PLAN

3.10.2.1 GAUTENG CONSERVATION PLAN V3.3

The Gauteng Conservation Plan (C-Plan) v3.3 was based on the systematic conservation protocol developed by Margules & Pressey (2000) and grounded in the principles of complementarity, efficiency, defensibility and flexibility, irreplaceability, retention, persistence and accountability.

The main purpose of C-Plan v3.3 was to serve as the primary decision support tool for the biodiversity component of the EIA process, to inform protected area expansion and biodiversity stewardship programmes in the province and to serve as a basis for development of Bioregional Plans in municipalities within the province. According to the Gauteng C-Plan v3.3, the proposed site fell within an Ecological Support Area (ESA) as well as Critical Biodiversity Area (CBA): Important Area as well as Irreplaceable area (**Figure 3-12).**

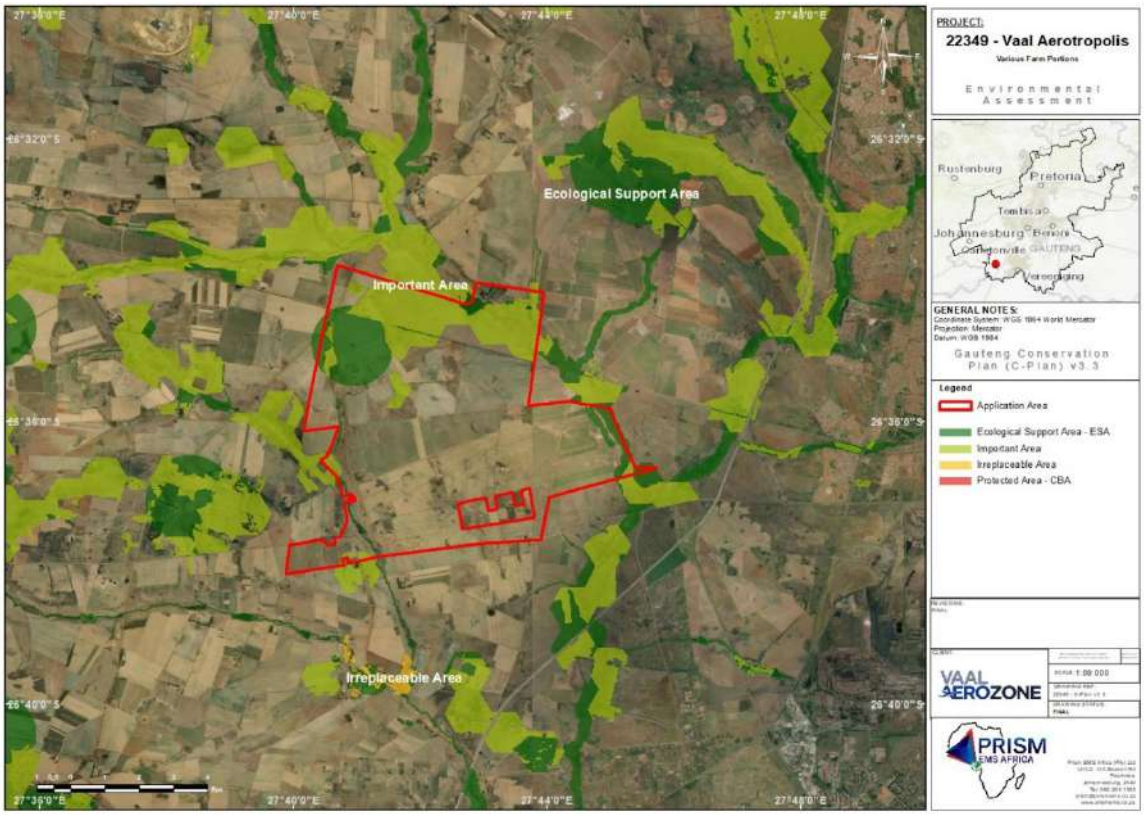


FIGURE 3-12: DESKTOP SENSITIVITY (C-PLAN 3.3)

3.10.2.2 GAUTENG CONSERVATION PLAN V4.0 (2024)

The Gauteng Conservation Plan Version 4, which replaced the C-Plan v3.3 in 2024, is a strategic, science-based spatial planning tool developed by the then Gauteng Department of Agriculture, Rural Development and Environment (now Gauteng Department of Environment). It aims to identify and prioritise areas critical for biodiversity conservation and ecological sustainability across the province. The plan supports informed decision-making in land use, environmental assessments and development planning.

C-Plan v4.0 replaced the old C -Plan v3.3 and uses systematic conservation planning and GIS analysis to map and classify land into categories based on biodiversity value and ecological function. Each category is accompanied by specific land use and management guidelines to ensure the protection of ecological infrastructure and ecosystem services. A C-Plan v4 Map identifies biodiversity priority areas in three major categories which include:

- **Protected Areas (PA)**: areas which have legal protection under relevant legislation, or which are managed with a primary conservation objective Protected areas are a fundamentally important part of systematic conservation planning as they indicate the proportion of the various biodiversity targets that are already protected and subsequently the shortfall that would need to be met in order to achieve targets.
- **Critical Biodiversity Areas (CBA1 and CBA2)**: areas included in the C-Plan Map because of their biodiversity importance and contribution to achieving conservation targets. CBAs include natural or near-natural terrestrial and aquatic features that were selected based on an area's biodiversity characteristics, spatial configuration and requirement for meeting both biodiversity pattern and ecological process targets. CBAs include irreplaceable sites where no other options exist for meeting targets for biodiversity features (CBA 1), as well as best-design sites selected to meet conservation targets where there are spatial options to meet these targets (i.e., the remaining extent of the biodiversity feature is more than the conservation target) – sites which represent an efficient configuration of sites to meet targets in an ecologically sustainable way that is least conflicting with other land uses and activities (CBA 2). CBAs should be maintained in a natural state, with no further loss of habitat and no deterioration in ecological condition Some CBAs are degraded or irreversibly modified but are still required for achieving specific targets, such as cultivated lands for threatened species foraging area or maintaining ecological connectivity in the landscape.
- **Ecological Support Areas (ESA1 and ESA2)**: Natural, near natural, degraded or heavily modified areas required to be maintained in an ecologically functional state to support Critical Biodiversity Areas and/or Protected Areas ESAs maintain the ecological processes on which Critical Biodiversity Areas and Protected Areas depend Some ESAs are irreversibly modified but are still required as they still play an important role in supporting ecological processes.
- Other Areas: includes natural areas.

The plan is widely used by government departments, municipalities, developers, consultants, and conservation organisations. It plays a key role in guiding protected area expansion, supporting biodiversity stewardship and informing Environmental Impact Assessments (EIAs). Ultimately, C-Plan v4 helps balance development needs with the imperative to conserve Gauteng's natural heritage and meet national and international biodiversity commitments.

According to the Gauteng C-Plan v4 the site identified for the proposed Vaal Aerotropolis falls within an Ecological Support Area (ESA 1 and 2) as well as Critical Biodiversity Areas (CBA 1 and 2) (**Figure 3-13)**.

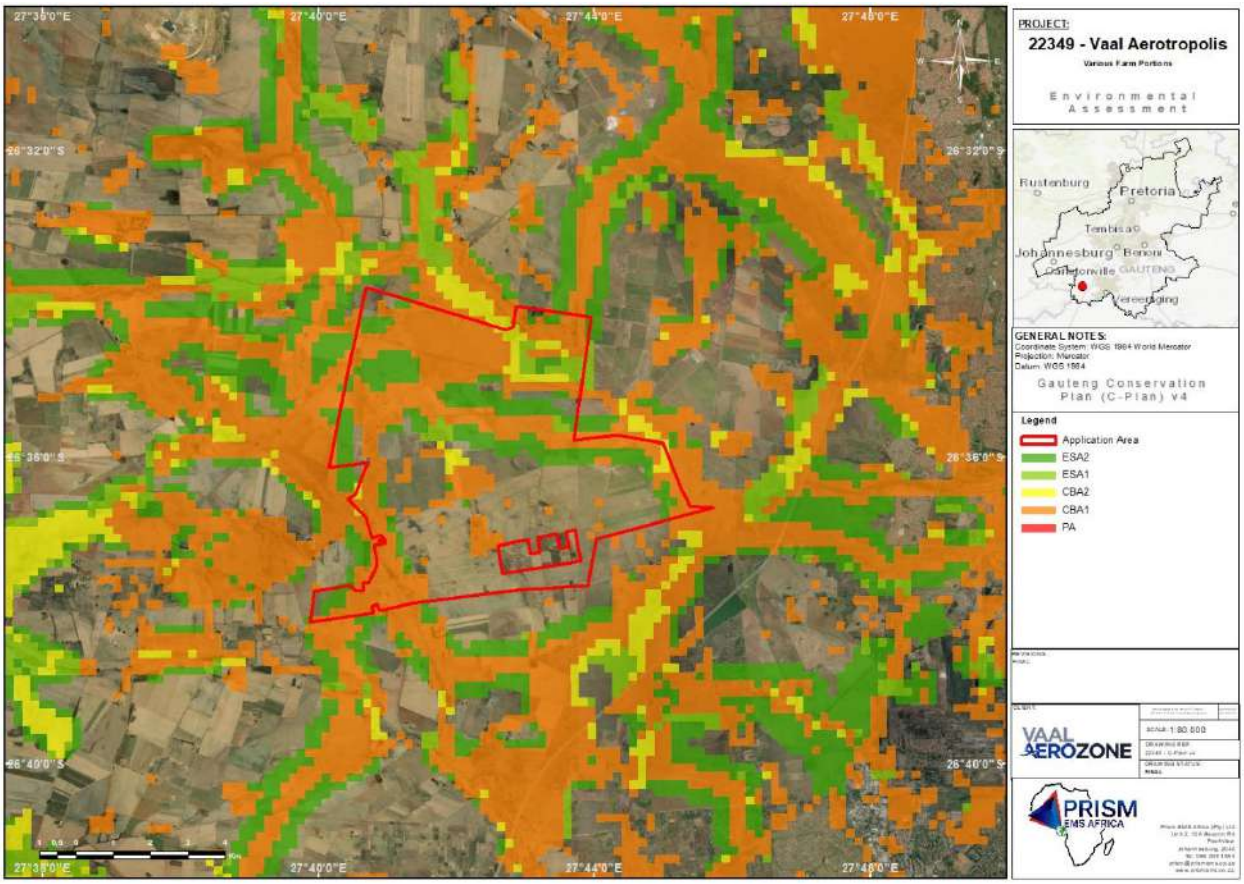


FIGURE 3-13: DESKTOP SENSITIVITY (C-PLAN 4)

3.10.3 THREATENED TERRESTRIAL ECOSYSTEMS

The first national list of threatened terrestrial ecosystems for South Africa was gazetted on 9 December 2011 (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GoN 1002), 9 December 2011). The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to preserve witness sites of exceptionally high conservation value.

The proposed development occurs within the Soweto Highveld Grassland which is classified as vulnerable (**Figure 3-14).** According to Mucina and Rutherford (2006), only about 0.2% of this unit is conserved in statutory reserves and a number of private conservation areas. More than half of the units have already undergone transformation mostly by urbanisation, cultivation or by building of roads.

Flora on the subject site will be investigated in a Floral Impact Assessment and discussed in the Terrestrial Biodiversity Assessment.

3.10.4 GAUTENG PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK (GPEMF)

The objective of the GPEMF is to guide sustainable land use management within the Gauteng Province and has the following purpose:

- To provide a strategic and overall framework for environmental management in Gauteng;
- Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng;
- Determine geographical areas where certain activities can be excluded from an EIA process; and
- Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones (EMZs) in a manner that promotes proactive decision-making.

The GPEMF identified a number of EMZs based on the desired state, and the environmental sensitivity (amongst others). These are as follows:

- Zone 1: Urban development zone
- Zone 2: High control zone (within the urban development zone)
- Zone 3: High control zone (outside the urban development zone)
- Zone 4: Normal control zone
- Zone 5: Industrial and large commercial focus zone

The proposed development falls within Zone 3: High control zone (outside the urban development zone) and Zone 4: Normal control zone (**Figure 3-14**).

Zone 3 is identified as sensitive areas outside the urban development zone. These areas are sensitive to development activities and in several cases also have specific values that need to be protected. As a result of this, no listed activities are excluded from environmental assessment requirements in this zone.

Zone 4 is dominated by agricultural uses outside the urban development zone as defined in the Gauteng Spatial Development Framework (GSDF). No listed activities are excluded from environmental assessment requirements in this zone. As noted in Section 3.7, the Agricultural potential of the site is medium to high. An Agricultural Impact Assessment will be undertaken to address this.

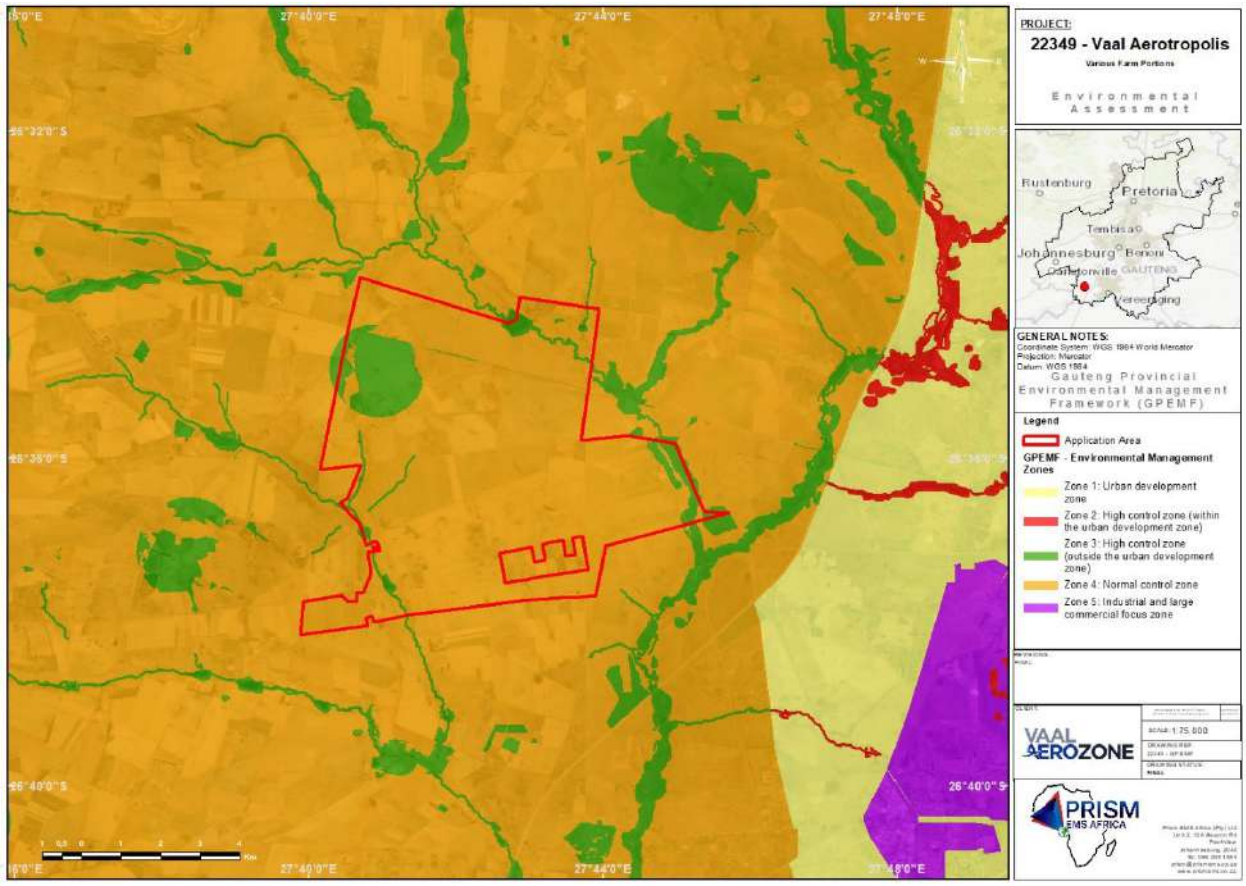


FIGURE 3-14: GAUTENG PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK

3.10.5 FAUNA

The National Screening Tool has indicated that in terms of fauna (invertebrates, birds, mammals, reptiles etc.), the area earmarked for the aerotropolis development, has sensitivity ranging from 'medium' to 'high'. Potential Invertebrates-*Aloeides dentatis dentatis*, *Lepidochrysops praeterita* and *Lepidochrysops procera*, Mammals- *Crocidura maquassiensis, Hydrictis maculicollis* and *Ourebia ourebi ourebi* and Birds-*Hydroprogne caspia*, and *Eupodotis senegalensis* with medium sensitivity. Bird species with high sensitivity includes *Tyto capensis* and *Mycteria ibis*.

Fauna species will be assessed in detail in a Faunal Impact Assessment, as part of the combined Terrestrial Biodiversity Assessment, and a separate specialist Avifaunal Impact Assessment stretching over two seasons, will be completed.

3.10.6 PROTECTED AREAS AND IMPORTANT BIRD AREAS

Protected Areas are those areas included in the South African Protected Areas Database (SAPAD). This database is maintained by the DFFE as required by the National Environmental Management: Protected Areas Act (Act 57 of 2003).

Important Bird and Biodiversity Areas (IBAs), as defined by BirdLife International, constitute a global network of over 13 500 sites, of which 112 sites are found in South Africa. IBAs are sites of global significance for bird conservation, identified nationally through multi-stakeholder processes using globally standardised, quantitative, and scientifically agreed criteria. Essentially, these are the most important sites for conserving.

Figure 3-15 shows the closest Protected Areas as described by the South Africa Protected Areas Database (SAPAD), namely the Tweefontein Private Nature Reserve Protected area that is in the process of deregistration [2]. Note that no IBAs are located near the proposed site.

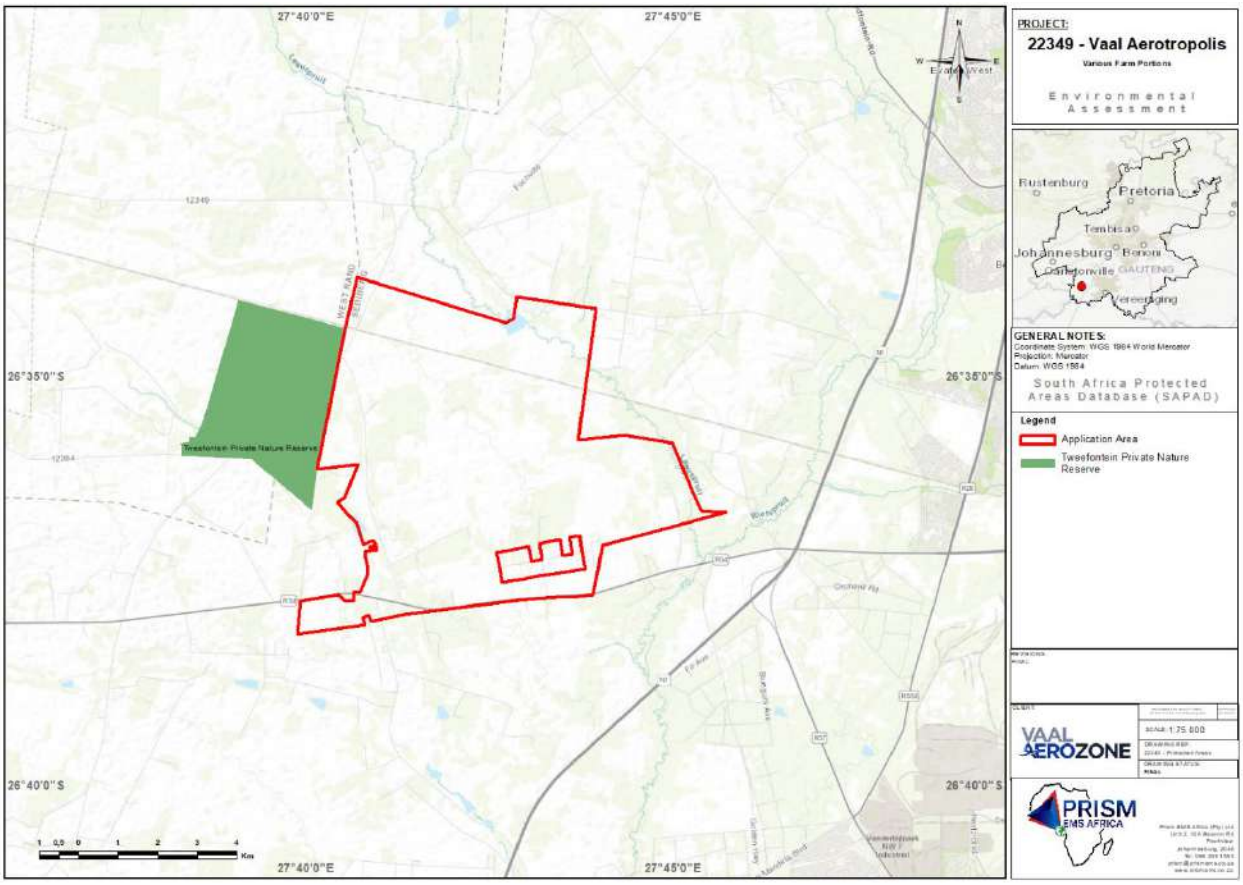


FIGURE 3-15: PROTECTED AREAS (SAPAD)

3.10.7 EXISTING STATUS

As noted above, the maps produced identify desktop sensitivity. A site verification assessment has been undertaken and shows that the site is disturbed and transformed in parts. The predominant land use of the study area is agricultural activities in the form of cultivated lands and livestock farming.

[2] *A separate application to facilitate the deregistration of the Tweefontein Private Nature Reserve is currently in process.*

3.10.8 IMPLICATIONS

Due to the desktop sensitivities identified through the utilisation of GIS as well as the National Screening Tool, various specialist assessment will be undertaken to determine the impacts of the proposed development on biodiversity at the site. The findings of these reports will be incorporated into the EIA Report, and mitigation measures will be included in the EMPr.

3.11 SURFACE WATER

3.11.1 OVERVIEW

The proposed development area is located within quaternary catchments C22J of the Vaal Orange Water Management Area (WMA) as gazetted in GN 3855 of GG 49225 (1 September 2023). The National Wetland Map Version 6 (NWMv6), as presented by SANBI, indicates that the site has i) two main streams draining through the study area, ii) an unchanneled valley bottom wetland to the west iii) a channelled valley bottom wetland in the east, iv) depression and seepage wetlands, and v) artificial wetlands (**Figure 3-16**).

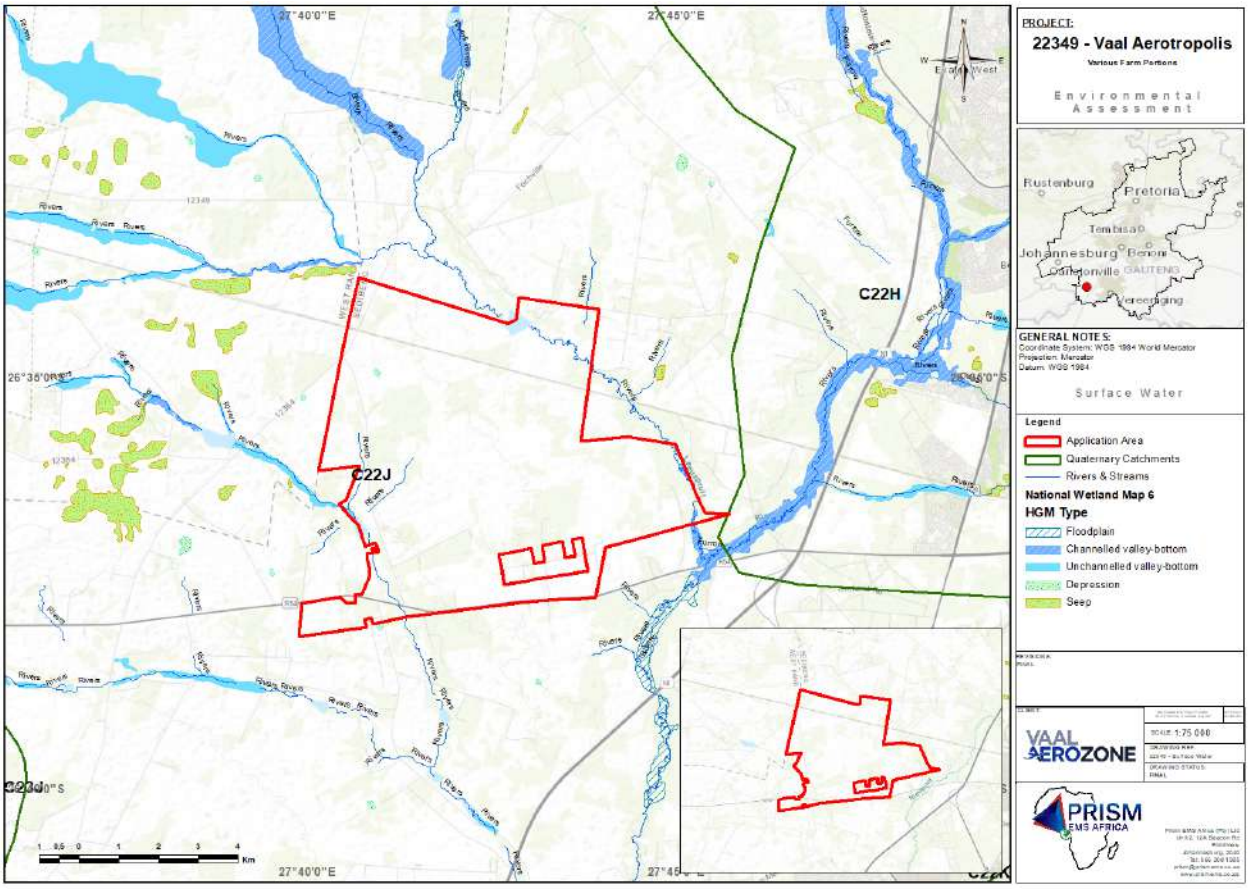


FIGURE 3-16: SURFACE WATER

3.11.2 IMPLICATIONS

In order to determine the impacts of the proposed development on surface water, both an Aquatic Assessment and Wetland Impact Assessment will be undertaken and included in the EIA. A WULA is also being undertaken (concurrently with the Scoping and EIA process).

3.12 GROUNDWATER

3.12.1 OVERVIEW

Based on the conceptual hydrogeological understanding of the site, the following hydro-stratigraphic zones are differentiated within the area:

- Intergranular aquifer system: The proposed area is situated upon an integral and weathered zone of the unconfined or semi-confined shallow weathered aquifer or hydro-stratigraphic zone. Water intersections in the intergranular and weathered aquifer are mostly above or at the interface to fresh bedrock, where less permeable layers of weathering products and capillary forces limit the vertical percolation of water and promote lateral water movement.
- Fractured hard rock aquifer: Groundwater flow is governed by secondary porosities such as faults, fractures, joints, bedding planes and other geological contacts in rocks such as sandstone, shale and mudstones. The flow through secondary structures is due to the less permeable matrix of the rock itself.

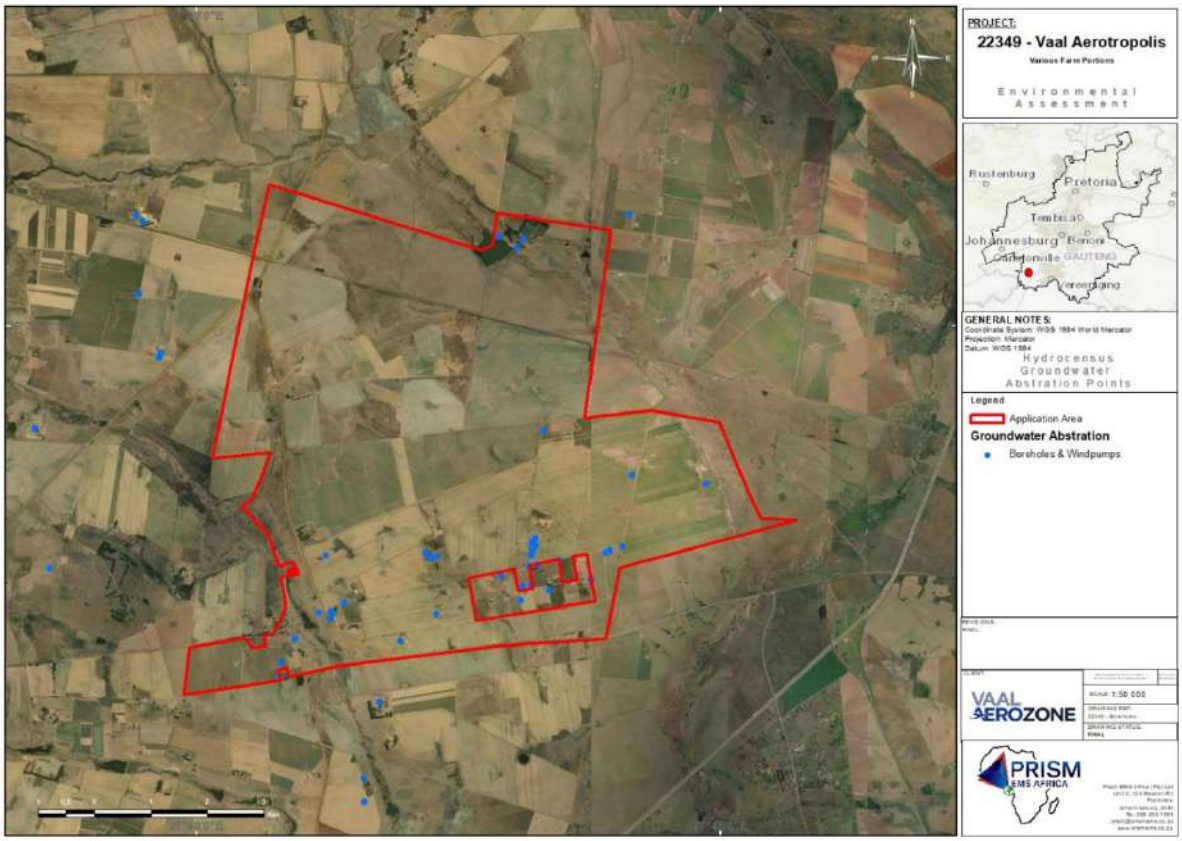


FIGURE 3-17: LOCATION OF GROUNDWATER ABSTRACTION POINTS IN THE STUDY AREA

3.12.2 IMPLICATIONS

A basic hydrogeological study was conducted by Delta-H Water System Modelling (Pty) Ltd. The scope of work for the study included i) collection and review of national and regional geological and hydrogeological data, ii) groundwater vulnerability and aquifer classification assessment, iii) datasets augmentation with a hydro-census in order to establish the quality and quantity of the groundwater resource as well as the actual utilisation thereof, and iv) a specialist report documenting all methodologies, findings, quantitative analyses, recommendations, and conclusions. The Hydrogeological Report and findings will be included in the EIA report.

3.13 ARCHAEOLOGY, CULTURAL HERITAGE AND PALAEONTOLOGY

3.13.1 OVERVIEW

Information on the archaeology and palaeontology of the area is provided below.

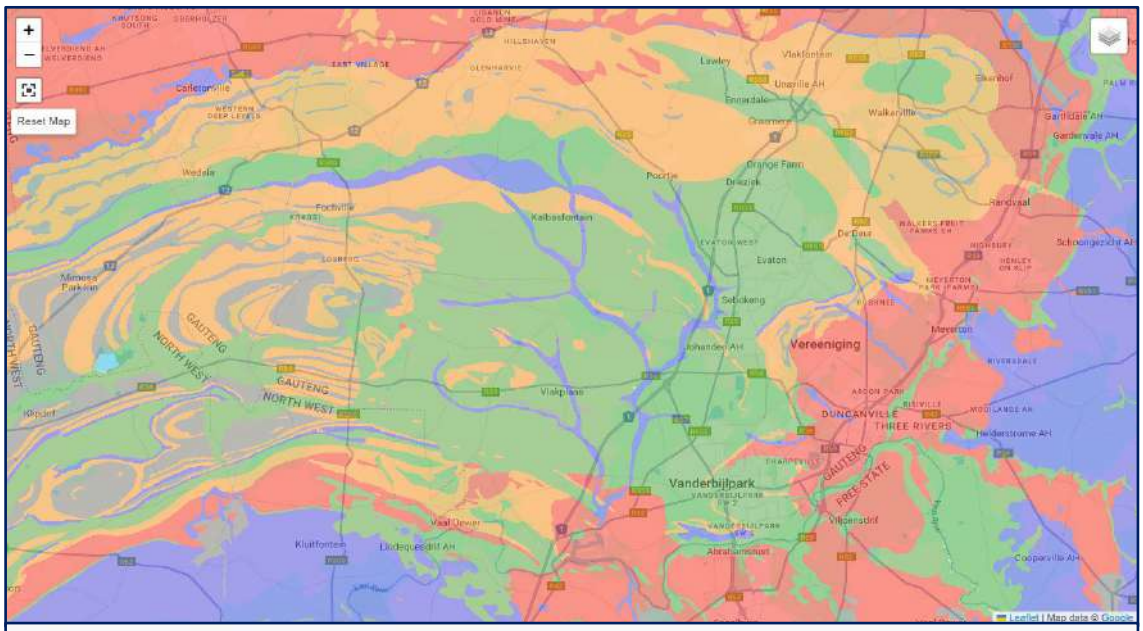
3.13.1.1 ARCHAEOLOGY AND CULTURAL HERITAGE

The National Screening Tool indicated a **low** sensitivity for archaeological and cultural heritage resources. The site verification visits however indicated some areas of sensitivity in terms of cultural heritage (**Figure 3-18**). These sensitive sites include graves and graveyards as well as buildings and ruins of buildings dating back longer than 60 years. A Phase 1 Heritage Impact Assessment is required to obtain formal clearance from the SAHRA, in terms of the NHRA, 1999.

FIGURE 3-18: HISTORICAL FEATURES OBSERVED ON SITE

3.13.1.2 PALAEONTOLOGY

The Palaeontological (fossil) Sensitivity Map developed by SAHRA (**Figure 3-19**) as well as the Palaeontological Theme Sensitivity Map of the DFFE Screening tool has been reviewed and shows that the proposed site falls within an area with **high, medium and low** fossil sensitivities. A palaeontological study will therefore be undertaken and incorporated into the EIA Report.



Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

FIGURE 3-19: PALAEONTOLOGICAL (FOSSIL) SENSITIVITY MAP (SOUTH AFRICAN HERITAGE RESOURCES INFORMATION SYSTEM (SAHRIS) - HTTPS://SAHRIS.SAHRA.ORG.ZA/MAP/PALAEO)

3.13.2 IMPLICATIONS

A Phase 1 HIA and PIA will be conducted to determine whether any palaeontological resources occur on site and determine the impact of the proposed development on the historical sites. This will include a field study to i) systematically survey the proposed impact areas to locate, identify, record, photograph and describe sites of archaeological, palaeontological, historical or cultural interest; ii) record GPS points of sites/areas identified as significant areas; and iii) determine the levels of significance of the various types of heritage and palaeontological resources recorded in the project area. The findings of this study will be included in the EIA Report.

4. SCOPE OF THE PROPOSED PROJECT

4.1 DESCRIPTION OF PROJECT ACTIVITIES

4.1.1 DEVELOPMENTAL CONTROLS AND LAYOUT

Vaal Aerozone (Pty) Ltd intents to develop and manage the Vaal Aerotropolis, planned for an area ± 10km west of the N1 and Vanderbijlpark in the Sedibeng district located within the Emfuleni and Rand West City Local Municipalities, Gauteng Province. An Aerotropolis is defined as a metropolitan sub-region whose infrastructure, land use and economy are centred on and around an airport. This development, which will be known as the Vaal Aerotropolis, aims to serve as a key freight and logistics hub, featuring a two-terminal design and integrated air cargo services containing state-of-the-art facilities and infrastructure. The Vaal Aerotropolis will serve as a driving force and strategic investment for economic growth and global trade, thereby revitalising Emfuleni and creating sustainable value in the region. The planned Vaal Aerotropolis will be developed to include a Cargo Terminal, Airport City, Solar Farm, Agri Zone, and Trade Zone. Each phase is designed to progressively expand the airport's capacity and functionality to accommodate increasing demand. All necessary ancillary services (e.g., water reticulation, roads, electricity, etc.) will be provided for the development, and subsequent applications will be lodged with the relevant competent authorities in due time.

The development of the Vaal Aerotropolis will be rolled out in three phases over a period of approximately 60 years depending on national and international economic factors. This application is relevant to Phase 1 of the Aerotropolis (**Figure 4-1**). The spatial requirements of the airport facilities are based on the air traffic demand forecasted as well as airport planning assumptions based on the forecasted airport operations. The requirements have been defined at a high level, using the annual volumes, planning ratios, benchmarking and industry best practice foreseen for the development.

Table 4-1 below indicates results of a high-level airport demand assessment conducted in 2025, confirming that the proposed airport at the subject site could theoretically generate demand in excess of 4,5 million annual passengers, and around 15 167 tons of cargo within 5-years of becoming operational.

A brief summary of anticipated timeframes, passengers, cargo, air traffic movements (ATMs), and location / footprint area foreseen for the development is provided below, in **Table 4-2**[3].

[3] *This application specifically seeks approval for Phase 1 – Other phases to be applied for in due course.*

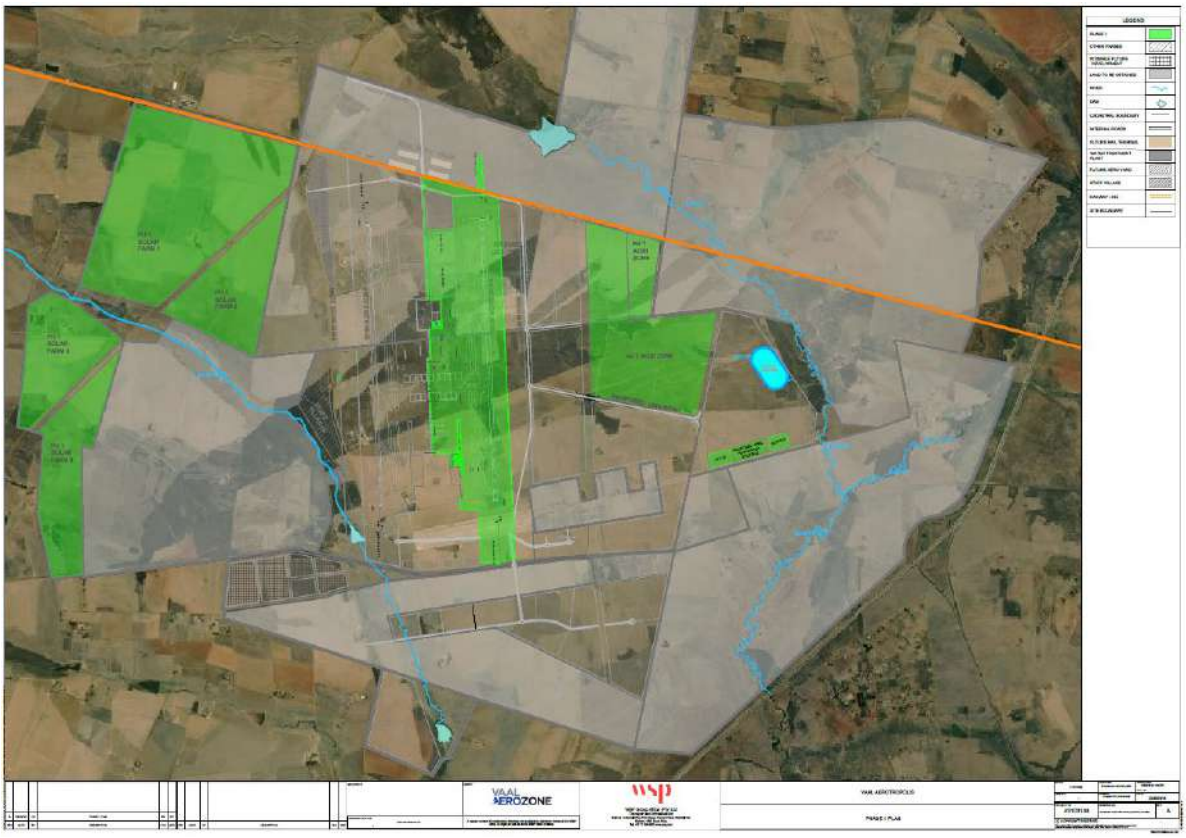


FIGURE 4-1: PROPOSED PHASE 1 OF THE VAAL AEROTROPOLIS DEVELOPMENT

TABLE 4-1: AIRPORT DEMAND (DEMACON, 2025)

		OR Tambo International Airport	Cape Town International Airport	King Shaka International Airport	Vaal Aerotropolis Trade Area	
					Low Scenario	High Scenario
Socio-Economic Profile	Population 2024	11 034 194	5 211 503	4 115 006	4 090 852	
	Population growth rate	1.66%	2.17%	1.59%	1.8%	
	Households	4 128 907	1 619 666	1 111 825	1 346 059	
	Households growth rate	2.75%	2.85%	1.24%	2.0%	
	SEM 4-5	30.10%	34.2%	24.20%	19.9%	
	SEM 4-5 population	3 321 292	1 779 955	995 831	814 080	
Passengers	International	7 054 616	2 754 405	274 882	1 252 066	1 407 439
	Regional	707 178	169 961	2 514	109 222	122 776
	Domestic	10 005 667	7 093 292	4 706 511	2 707 473	3 043 451
	Unscheduled	85 108	16 694	3 754	13 106	14 733
	Total	**17 852 569**	**10 034 352**	**4 987 661**	**4 081 867**	**4 588 399**
	Ratio Passengers per SEM 4-5	**5.38**	**5.64**	**5.02**		
Cargo	Import (tonne)	3 072 697	14 882	2 995	11 331	3 035 725
	Export (tonne)	71 342	36 129	2 800	404	108 314
	Total (tonne)	3 144 039	51 011	5 795	11 735	3 144 039

TABLE 4-2: PROPOSED CAPACITIES FOR THE DEVELOPMENT PHASES

Capacity	Phase 1 (This Application)	Phase 2	Phase 3
Expected Commencement Date	2028	2048	2068
Passenger Terminal (mppa)	7.2	25	45
Cargo Terminal (tons/year)	150 000	362 000	872 000
Runway (ATMs/hr)	23	59	93

4.1.2 AIRPORT PRECINCT AND OPERATIONS

4.1.2.1 RUNWAY AND ASSOCIATED INFRASTRUCTURE

Phase 1 of the new international airport will consist of a single, eastern runway system (Figure 4-2) with a second, western runway planned for the medium-long term development (i.e., Phase 2 – 3; Figure 4-3 and Figure 4-4). The location and orientation of the runways are already defined with a runway length of 4.2km and a width of 60m excluding the additional 7.5m paved shoulder on either side; therefore, a total width of 75m. The Runway End Safety Areas (RESA) provided at the end of each runway will be 240m long and 150m wide.

Note that all airfield separations and clearances will meet the ICAO recommendations. To that end the following will be implemented:

- Two parallel taxiways for greater operational flexibility.
- A distance of 180m between the centre line of the runway and the Code F taxiway.
- Another 83.5m between the Code F taxiway and Code E taxiway.
- Airside and inter-stand roads.
- Aircraft stands for any size of aircraft.

Airside roads will be 10m wide two-way 'Head of Stand' and 'Back of Stand' roads while inter-stand roads will interconnect every 4-5 aircraft stands. A 5m parking/kerb zone will also be provided between the 'Head of Stand' road and the terminal building.

Cargo stands will differ from passenger stands in that cargo stands will include additional operational areas between the stand and cargo terminal - of approximately 50m - to provide airside road and operational areas for cargo equipment.

TABLE 4-3: TYPE OF AIRCRAFT

Code Letter	Wingspan	Typical Aeroplane Example
A	≤15m	PIPER PA-31 / CESSNA 404 Titan
B	15m but <24m	BOMBARDIER Regional Jet CRJ-200 / DE HAVILLAND CANADA DHC-6
C	24m but <36m	BOEING 737-700 / AIRBUS A-320 / EMBRAER ERJ 190-100
D	36m but <52m	B767 Series / AIRBUS A-310
E	52m but <65m	B777 Series / B787 Series / A330 Family
F	65m but <80m	BOEING 747-8 / AIRBUS A-380-800

4.1.2.2 PASSENGER TERMINAL

The passenger terminal will be built and scaled as the project progresses. Phase 1 will be capable of accommodating 7.2mppa (**Table 4-2**). It has been assumed that Phase 1 and 2 will be comprised of 65% domestic and 35% international operations, respectively; while Phase 3 will be comprised of 70% domestic and 30% international operations.

The total footprint area for the passenger terminal in Phase 1 will be 28 830m² which will be divided into 10 080m^2 for international and 18 750m^2 for domestic passengers.

4.1.2.3 CARGO TERMINAL

The cargo terminal will have a footprint area of 8 830m² and will cater for a capacity of 150 000 tons per year during Phase 1. A 50m wide buffer will be provided between the cargo building and cargo stands to safeguard cargo operations. Another 75m wide buffer will be provided on the landside of the building to safeguard space for car parking and manoeuvring.

A freight forwarding building will also be constructed as support infrastructure to the cargo terminal itself. This proposed area will be 22 700m² for Phase 1 based on tonnes per year / square meter ration.

The space requirements for the cargo terminal have been calculated using i) the guidelines provided by the International Air Transport Association (IATA), and ii) a benchmark study that was conducted to assess the cargo facilities provided for King Shaka and O.R. Tambo international airports (**Table 4-1** above).

4.1.2.4 ADDITIONAL FACILITIES

The following additional facilities will also form part of the airport precinct and operations:

- Air Traffic Control Tower: The footprint area for the Air Traffic Control (ATC) tower is 10 000 m² which includes the ATC tower as well as car parking and related functions. The location of the ATC tower is determined by the height required to adequately view the operational area.
- Airport Rescue and Fire-fighting Services Station: The total footprint area required for the Airport Rescue and Fire-fighting Services (RFFS) is 10 000 m², with two stations planned per runway. The requirements include space for car parking, internal roads and RFFS related functions.
- Ground Support Equipment (GSE) and Airport Maintenance Facilities: For Phase 1 a footprint area of 21 600 m² is required for the envisaged passenger capacity in terms of GSE and Airport Maintenance Facilities.
- Maintenance, Repair and Overhaul (MRO) Facilities: It is proposed that, during Phase 1, the MRO hangers should be able to cater for two (2) Code C and one (1) Code F aircraft which will result in a total footprint area of 41 400 m². This footprint area will include supporting infrastructure such as hardstands, workshop, warehouse and car parking.

- Flight Catering Facilities: The footprint area for the catering facilities is based on the international benchmark of 1 200 m² per mppa, and includes an area for car parking, therefore the footprint area for Phase 1 will be 8 640 m².
- Parking Facilities: Car parking for passenger vehicles will be provided. The proportions of footprint areas for the car parking facilities are calculated as 35% multi-story car parks (MSCP), 45% long-stay car parks, 10% for car rentals and 10% for staff employed at the airport. Furthermore, a total of 300 car parking spaces per mppa space for MSCP and 650 car parking spaces per mppa for long stay parking with an area is 20 m² per parking has been assumed in accordance with the international benchmark. The total footprint area for the parking facilities is set to be 208 800 m² for Phase 1.

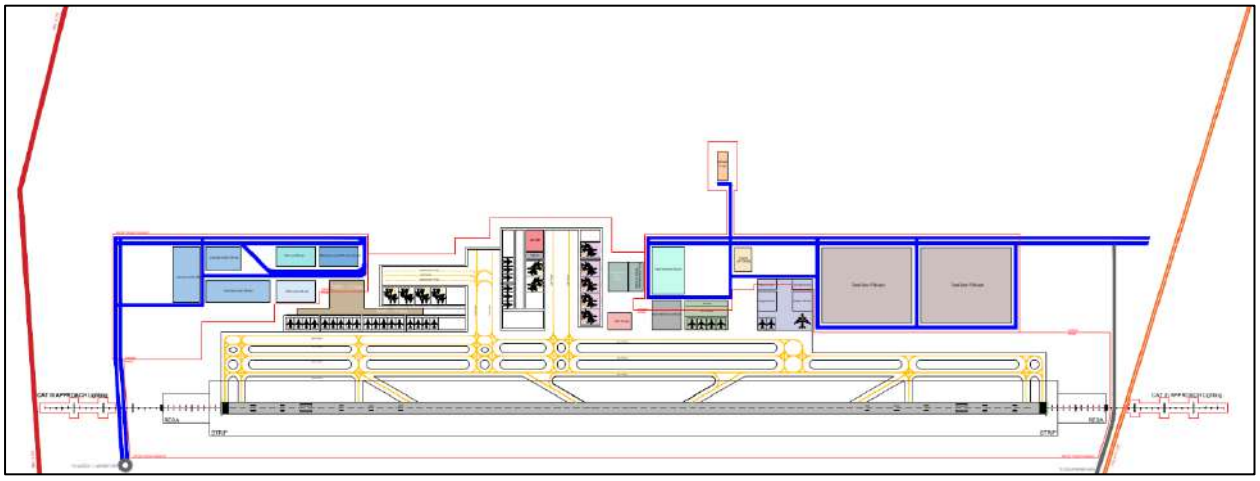


FIGURE 4-2: PROPOSED AIRPORT PRECINCT LAYOUT PLAN FOR 7.2MPPA (PHASE 1)

4.1.3 AIRPORT CITY

The Airport City will be one of the first purpose-planned aviation cities in Africa. The footprint area for Phase 1 (Figure 4-1) is anticipated to be 14 ha which will include:

- a 90-room hotel.
- fully serviced premium offices spanning approximately 3 000m^2.
- Conference centre, shopping mall,
- Medical consulting rooms.
- A bus office hotel parking area.

During Phases 2 and 3 it is anticipated that the total area will increase to 34 ha which will include increased retail, hospitality, medical and leisure spaces in an urban green environment which will hold a minimum 4-star rating. Upon completion, the Airport City will include eight blocks consisting of 45 individual stands, pedestrian-friendly zoned, dedicated cycle lanes, a tree-lined boulevard, multi-functional lawn spaces and leases for up to 50 years.

4.1.4 AGRI-ZONE

As indicated above, the proposed Aerotropolis development incorporates an extensive Agri-Zone as an integral component of the overall development. The Agri-Zone will focus on the production of high-value agricultural products suitable for air transport and export to international markets through the proposed cargo terminal.

The proposed Agri-Zone is envisaged as a high-technology agricultural cluster, incorporating climate-controlled growing facilities, including greenhouses and hydroponic production systems, and is anticipated to become one of the largest climate-controlled agricultural production areas in Africa. An integrated perishable-product supply chain is also proposed, incorporating associated logistics and storage infrastructure. The development further provides for a state-of-the-art tissue culture facility and a dedicated live-animal holding facility intended to facilitate the transportation of live animals by air.

4.1.4.1 DEDICATED AGRI-EXPORT ZONES AND CARGO INTEGRATION

The Agri-Zones will be directly integrated with the airport's cargo terminal, offering a one-stop regulatory services environment with direct access to forwarders in the Trade Zone, which is planned as a 26-hectare airside freight-oriented export environment, within the designated Special Economic Zone. It is anticipated that this co-location of production with air-freight infrastructure and streamlined export regulation would reduce post-harvest loss and transit time for perishable produce, and increase farm-gate returns per hectare, relative to the land's current use.

4.1.4.2 AGRICULTURAL INTENSIFICATION

The Agri-Zones are envisaged to be the largest climate-controlled growing area in Africa, supported by an integrated perishable supply chain and a state-of-the-art tissue culture facility. This represents a shift from current, comparatively extensive production toward controlled-environment and precision agricultural systems, which should result in producing substantially higher output per hectare than existing land use, thereby mitigating a portion of the reduction in gross agricultural area, with increased yield intensity on the retained agricultural footprint. The intensified production is planned to be supported by the development's 1,000-hectare on-site solar farm, which should supply sustainable energy to the Vaal Aerotropolis, and will be supported by multiple backup systems ensuring business continuity, which is relevant to the energy demands of climate-controlled growing infrastructure, as is planned for the site.

4.1.4.3 DIVERSIFICATION OF AGRICULTURAL OUTPUT AND LIVESTOCK EXPORT

The Agri-Zones will include what is expected to be the first live animal holding area for transport by air in South Africa, introducing a live-export value chain not currently present in the region, and the development will also be linked to the Agri-Parks programme, expecting to create up to ±300,000 small-scale producers and 145,000 new jobs within the first five years of operation. It is anticipated that this economic catalysation will result in broadening the regional agricultural economy beyond current commodity production and extending participation to small-scale producers, rather than concentrating production solely within the

development footprint. The programme is anticipated to support up to 300,000 small-scale producers and facilitate approximately 145,000 new employment opportunities over the next five years, subject to the approval of the proposed development.

4.1.4.4 CONTRIBUTION TO FOOD SECURITY

The objective is for the combination of a climate-controlled Agri-cluster, integrated perishable supply chain, tissue culture facility and direct air-cargo access to improve both export competitiveness and the efficiency of regional food distribution. The linkage to the Agri-Parks programme and the small-scale producer target is considered to extend food-security and livelihood benefits beyond the Aerotropolis' footprint, into the wider district, in support of national food security objectives.

4.1.4.5 NET-EFFECT POSITION

On this basis - notwithstanding a reduction in gross agricultural land area - agricultural output value, employment intensity per hectare and export competitiveness are expected to increase through the Agri-zone concept.

The Agri-Zone is intended to form a significant component of the Aerotropolis' agricultural and economic development strategy. From an agricultural impact perspective, the incorporation of the Agri-Zone provides an important mitigation measure in relation to the potential loss or transformation of existing agricultural land associated with the Aerotropolis. By creating dedicated areas for continued agricultural production, including intensive and high-technology production systems, the Agri-Zone is intended to partially mitigate the loss of conventional agricultural production capacity while simultaneously supporting new agricultural enterprises, market access, employment and economic opportunities. The proposed integrated supply chain and proximity to the cargo terminal further provide opportunities for agricultural products to access domestic and international markets.

The proposed eventual layout (Phase 3) for the development is provided together with the preliminary Site Development Plan (SDP) (**Figure 4-3** and **Figure 4-4**). All areas that will not be developed / utilised during Phase 1 of the project will remain as is (i.e. agricultural land will remain) until such time as the development thereof. All necessary environmental authorisations for individual future and/or agricultural activities will be applied for as and when required, but **do not form part of this application**.

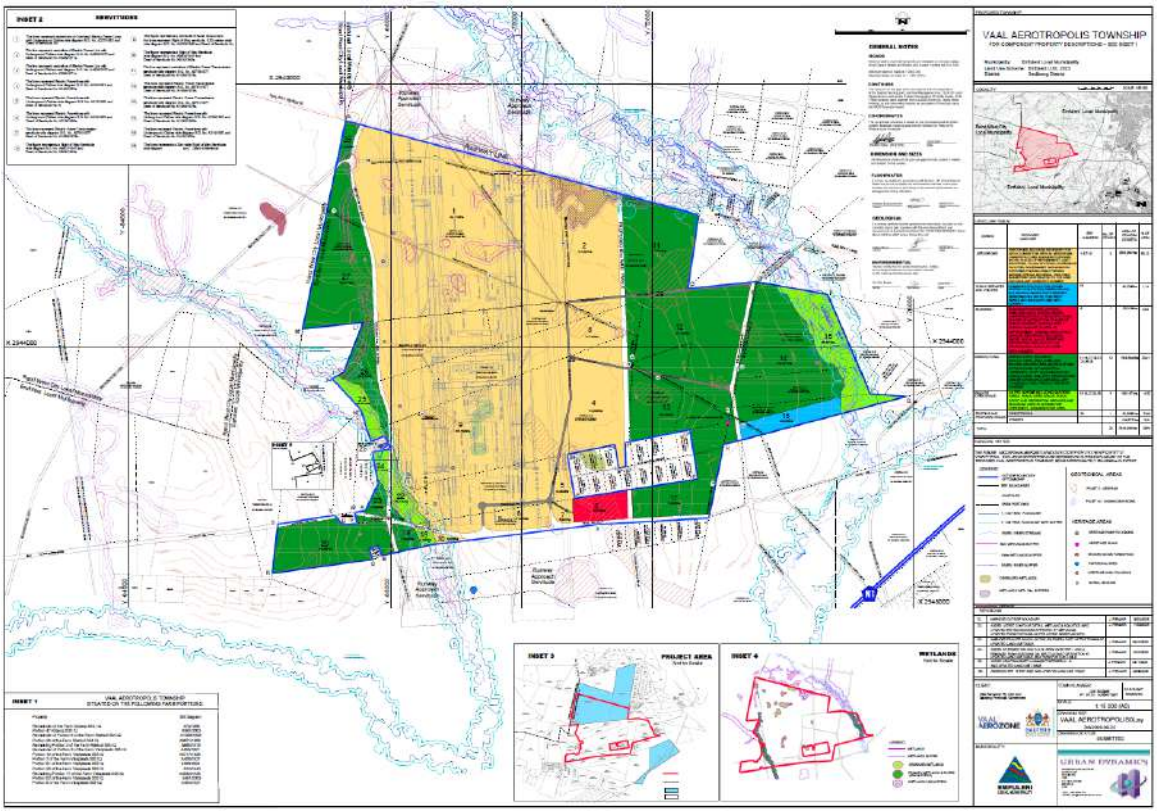


FIGURE 4-3: PROPOSED LAYOUT PLAN (PHASE 1)

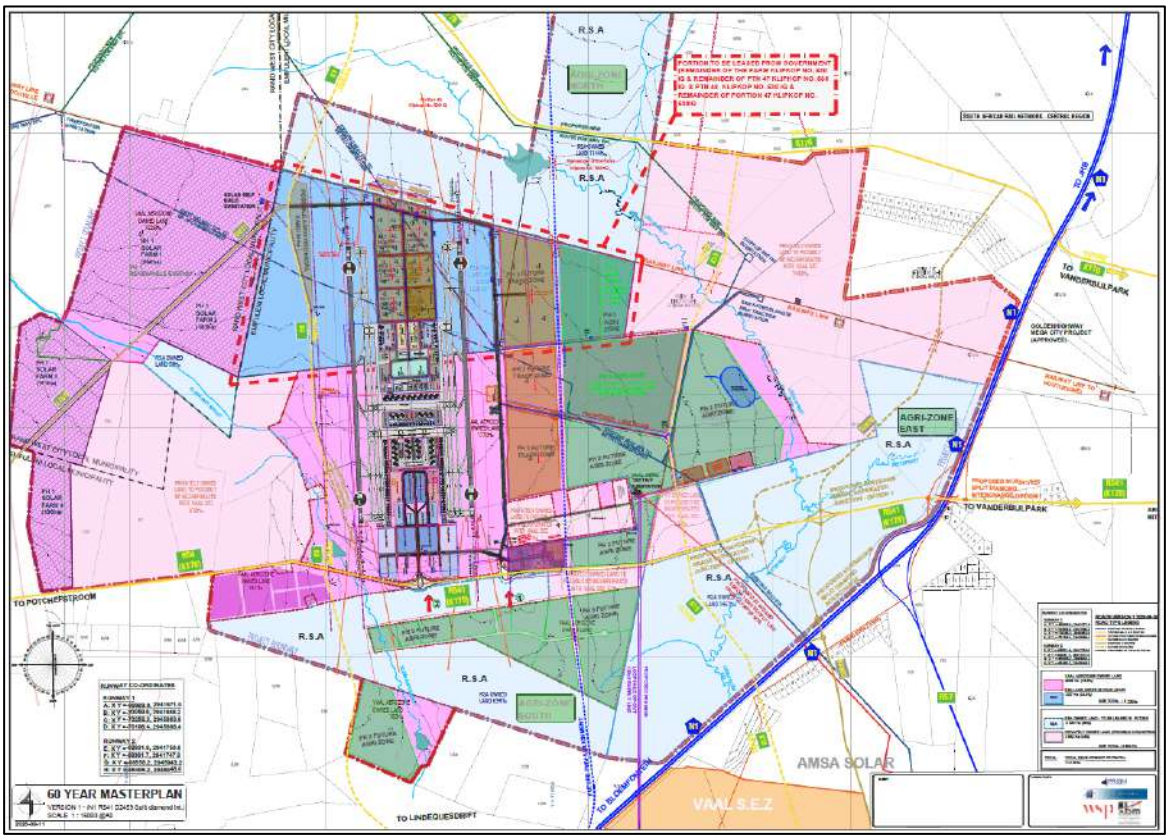


FIGURE 4-4: PRELIMINARY SITE DEVELOPMENT PLAN (COMPLETE DEVELOPMENT)

4.1.5 TRADE ZONE

The Trade Zone, also referred to as a logistics hub, will serve as an integration between air, rail ports, factories and motorways allowing different companies to perform tasks related to the flow of goods. This zone will consist primarily of light industrial and warehousing activities and will be located adjacent to the freight terminal for ease of freight transport. The size of the Trade Zone (Phase 1) will be ± 176 000 m² with a floor area ratio of 0.6 allowing for a total building area of ± 105 300 m². This area will include:

- A light manufacturing area estimated at 20% (i.e., 35 200 m²).
- A warehousing and distribution area estimated at 80% (i.e., 140 800 m²).

The trade zone is planned to be located between the two runways, which will be constructed as part of Phases 1 and 2, with the possibility of expanding to the east of the airport in Phase 3 (indicated in yellow in **Figure 1-1**).

4.1.6 ANCILLARY SERVICES

The following includes a short description on services that will be provided for the development, either by the developer or, if available, an external service provider. Please note that this information is only provided for the sake of contextualising and describing the project planning. Separate applications will be lodged in future for the authorisation of the services as and when required with the appropriate Competent Authorities.

4.1.6.1 WATER AND SEWER SERVICES

4.1.6.1.1 Water

The proposed water requirements for the Vaal Aerotropolis development according to the different phases are provided in **Table 4-4** and **Table 4-5** below. As the development will be phased, the water supply infrastructure will be aligned with the phased construction plans. Water demand has been estimated based on the land use and occupancy characteristics of each zone, factoring in peak demand scenarios and future growth. The phased approach ensures that the water supply infrastructure is both cost-effective and scalable, meeting the immediate needs of each phase while allowing for seamless expansion in subsequent phases. This design prioritises sustainability, reliability and compliance with relevant regulations and standards.

The bulk water supply, especially during the construction phase and initial stage of Phase 1 of the development, will be primarily sourced from high-yielding boreholes located within or near the proposed development area. Initial assessment results demonstrate the presence of productive water-bearing fracture zones, whereby additional boreholes can be drilled if so required (the necessary authorisations and licenses will be obtained as and when required).

Treatment, storage and distribution infrastructure will be installed and expanded as each phase of the proposed Aerotropolis is implemented. The storage requirements will incorporate provisions for emergency

supply (48-hour supply), as well as fire storage. For Phase 1 an on-site WWTW is proposed including i) a 20 000 m³ raw water storage reservoir, ii) an 8 000 m³ concrete reservoir for treated water storage, iii) a 2 000 m³ tower for adequate pressure supply, and iv) a 1 500 m³ fire storage reservoir. The bulk water distribution network will be comprised of 90 mm to 250 mm diameter pipelines that will allow the boreholes, WTW and airport precinct to be interconnected (**Figure 4-5**).

Proposed WWTW will flow as follows: Raw water storage > Inlet Works > Screening > Coagulation > Flocculation > Sedimentation > Filtration > Disinfection > 8 000 m³ Reservoir. Detailed Design Drawings will be provided during the EIA Phase.

TABLE 4-4: PROJECTED POTABLE WATER DEMANDS (WSP, 2026)

Detailed Land Use	Annual Average Daily Demand (AADD)	Phase 1	Phase 2	Phase 3
		Water Demand (kl/day)	Water Demand (kl/day)	Water Demand (kl/day)
Airport	25 l/passenger/day	493	1 712	3082
Hospital	1 kl/100m²/day	80	80	80
Hotel Park	1 kl/100m²/day	68	68	68
Shopping World	0.65 kl/100m²/day	306	306	306
Office Park	0.65 kl/100m²/day	483	483	483
Head Office	0.65 kl/100m²/day	54	54	54
Conference Centre	0.65 kl/100m²/day	44	44	44
Trade Zones	10 kl/ha/day	360	810	3985
Security House	0.3 kl/unit	2	2	2
Total Potable AADD		**1 890**	**3 559**	**6 934**
Conveyance Losses		10%	10%	10%
Treatment Losses		10%	10%	10%
Total GAADD		**2 268**	**4 271**	**7 627**
Peak Factor		1,5	1,5	1,5
Total Peak Hour Potable Water Demand		**3 402**	**5 873**	**11 441**

TABLE 4-5: PROJECTED NON-POTABLE WATER DEMANDS (FOR AGRICULTURE USES) (WSP, 2026)

Detailed Land Use	Annual Average Daily Demand (AADD)	Phase 1	Phase 2	Phase 3
		Water Demand (kl/day)	Water Demand (kl/day)	Water Demand (kl/day)
Agri-Lab	6 kl/ha	-	393	393
Agri Zones	12 kl/ha	4 267	5 365	4 713
Total Non-Potable Water Demand		**4 267**	**5 758**	**5 106**

The conceptual design of the bulk water infrastructure (both potable and fire) shall make provision to eventually have a bulk supply ring surrounding the Vaal Aerotropolis supplying water to a system of

reservoirs distributed at different development nodes. **Figure 4-5** shows the alignment of the proposed water services pipelines that will be put in place for the Vaal Aerotropolis.

Phases 2 and 3 of the proposed Aerotropolis will require additional water supply to meet the expected demand and is envisioned to be supplied by integration into the Rand Water A20 augmentation pipeline, which is projected to be commissioned in 2034. The said pipeline is expected to connect at the Langerand Reservoir site, which would then require a bulk water supply pipeline of approximately 24,5km, to supply the Vaal Aerotropolis storage facilities (**Figure 4-6**). Application/s for the relevant approval/s will be submitted as and when required, subject to the legislation applicable at the time.

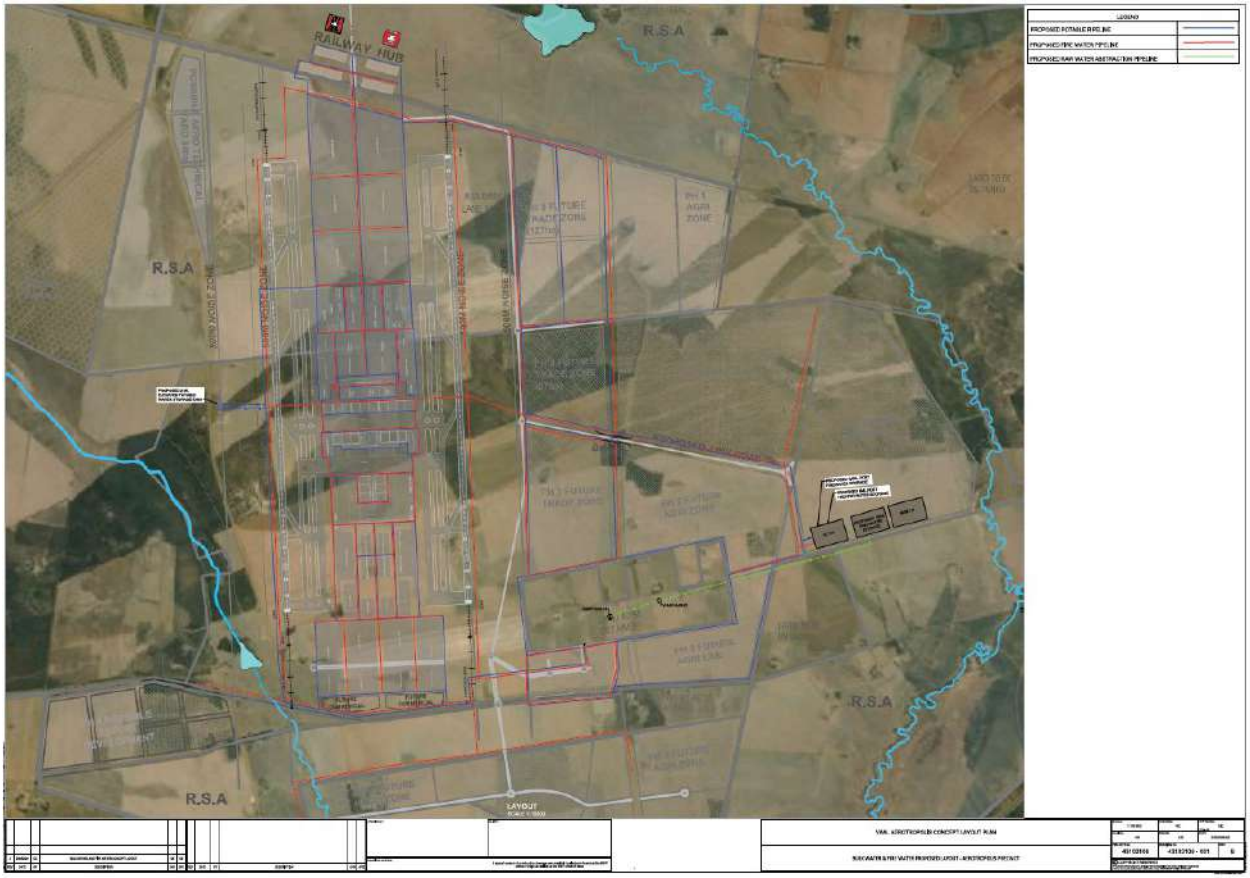


FIGURE 4-5: PROPOSED ALIGNMENT OF WATER AND FIRE WATER SERVICES (WSP, 2026)

FIGURE 4-6: PROPOSED ALIGNMENT OF BULK WATER SUPPLY FROM LANGERAND RESERVOIR TO VAAL AEROTROPOLIS (WSP, 2026)

4.1.6.1.2 Sewer

The bulk sewer services for the new development (**Figure 4-7)** are designed to manage sewerage generated across all zones, including, but not limited to, the airport precinct, airport city and trade zones. The proposed sewer requirements for the Vaal Aerotropolis are provided in **Table 4-6**. During each phase of the Aerotropolis' expansion, the bulk sewer infrastructure will be installed, expanded, and adapted to meet the increasing capacity requirements of the growing development. To that end, taking into consideration Emfuleni municipality's constraints and Vaal Aerotropolis' requirements, the following has been proposed for Phase 1 of the Vaal Aerotropolis development.

Phase 1 involves the construction of a 1.8ML/day on-site Wastewater Treatment Works (WWTW) which will be located east of the airport (**Figure 4-7)**. The WWTW is planned to, following treatment, result in wastewater ultimately being re-used for irrigation of landscaped and agricultural areas, as part of the industrial processes within the Trade Zone, or discharging into the nearby water resource (Leeuspruit River) in accordance with DWS standards (a Water Use License is in process for this activity). The bulk sewer infrastructure will focus on collecting sewerage from the airport, Airport City, and initial portions of the trade zones through a 300 mm diameter bulk sewer pipeline. A gravity sewer pipeline collecting the effluent will convey wastewater through 450 mm diameter bulk sewer pipes to the on-site WWTW.

This phase will include:

- Gravity Sewer Network: Designed to optimize flow from the airport, trade zones, and adjacent areas, minimizing the need for pumping stations.
- Pump Stations: Strategically located pump stations, where required, to assist flow from low-lying areas.
- On-Site WWTW: The WWTW will be designed with an initial treatment capacity of 1.8 ML/day, incorporating processes such as primary sedimentation, biological treatment, and tertiary treatment

for reuse purposes. The treatment processes are subject to the requirements for treated effluent to be reused on the Vaal Aerotropolis.

- Reclamation and Reuse: Treated wastewater will be, where possible, used for landscaping, industrial processes, and other non-potable applications. Sludge generated during treatment will be treated via sludge drying beds prior to being transferred to a designated composting area.

The design of the wastewater treatment system shall account for flexibility and adaptability to accommodate future demands. The proposed on-site WWTW will form part of a separate WULA, with DWS being the competent authority.

TABLE 4-6: PROPOSED SEWER REQUIREMENTS (WSP, 2026)

Detailed Land Use	Phase 1			Phase 2			Phase 3		
	Average Dry Weather Flow (kl/day)	Peak Dry Weather Flow (kl/day)	Peak Wet Weather Flow (kl/day)	Average Dry Weather Flow (kl/day)	Peak Dry Weather Flow (kl/day)	Peak Wet Weather Flow (kl/day)	Average Dry Weather Flow (kl/day)	Peak Dry Weather Flow (kl/day)	Peak Wet Weather Flow (kl/day)
Airport	395	592	651	1 370	2 055	2 260	2 466	3 699	4 253
Hospital	64	95	105	64	95	105	64	95	110
Hotel Park	55	82	90	55	82	90	55	82	94
Shopping World	244	367	403	244	367	403	244	367	422
Office Park	387	580	638	387	580	638	387	580	667
Head Office	43	65	71	43	65	71	43	65	75
Conference Centre	35	52	58	35	52	58	35	52	60
Trade Zones	288	432	475	648	972	475	3 188	4 782	5 499
Security House	2	3	3	2	3	3	2	3	3
Total	**1 512**	**2 268**	**2 608**	**2 847**	**4 271**	**4 291**	**6 483**	**9 725**	**11 183**

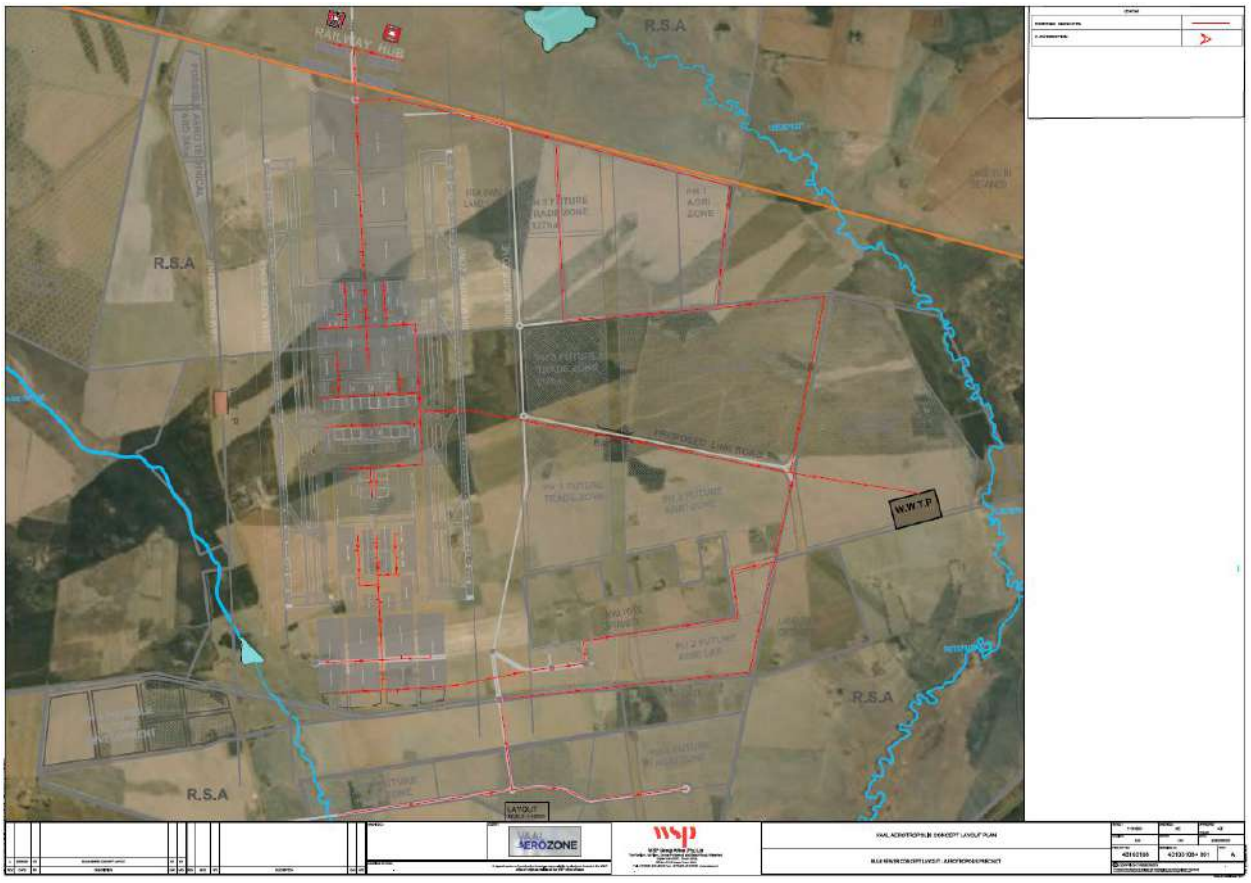


FIGURE 4-7: PROPOSED ALIGNMENT OF SEWER LINES & WWTP POSITION (WSP, 2026)

4.1.6.2 ROADS

A new and upgraded network will be constructed to serve the access and mobility needs of the Vaal Aerotropolis site and surrounding land-uses. The proposed site is surrounded by numerous high, medium and low order roads that will provide vehicle and public transport access to the site. As part of this broader context, a TIA was undertaken to evaluate the potential impact of Phase 1 of the Vaal Aerotropolis on the surrounding road network, including the required new and upgraded roads, interchanges, access points and futureproofing for subsequent development phases[4]. The assessment also included SANRAL's N1 interchange Fatal Flaw Report and the N1 Interchange Application to the Gauteng Department of Roads and Transport (GDRT).

All roads and access points will be designed to meet the following objectives:

- To ensure appropriate regional and metropolitan access to the aerotropolis and surrounding Agri zones.

[4] *Environmental Authorisation to be completed for external roads – Separate Process – In Progress*

- Ensure direct and efficient road access to and linkage between various sub-zones of the greater aerotropolis and its precincts.
- To establish a suitable, economical and hierarchical movement network for all vehicles, for passengers, staff, freight and non-motorised transport.
- Enable the establishment of effective and efficient public transportation access.
- Promote integrated and safe vehicle and non-motorised access and circulation to site, on site, for an efficient connected site.
- Promote a multi-modal approach to transport provision.

The key municipal and provincial routes that will support the Vaal Aerotropolis includes the N1 freeway, P24 (R54 / K178), D2459 (Roots Road), and possible future links, all of which will require upgrades - primarily to dual carriageways - to accommodate traffic to and from the proposed development. Presently, there are no suitable direct access points to the N1 (**Figure 4-8**), making new interchange infrastructure critical to the development's viability.

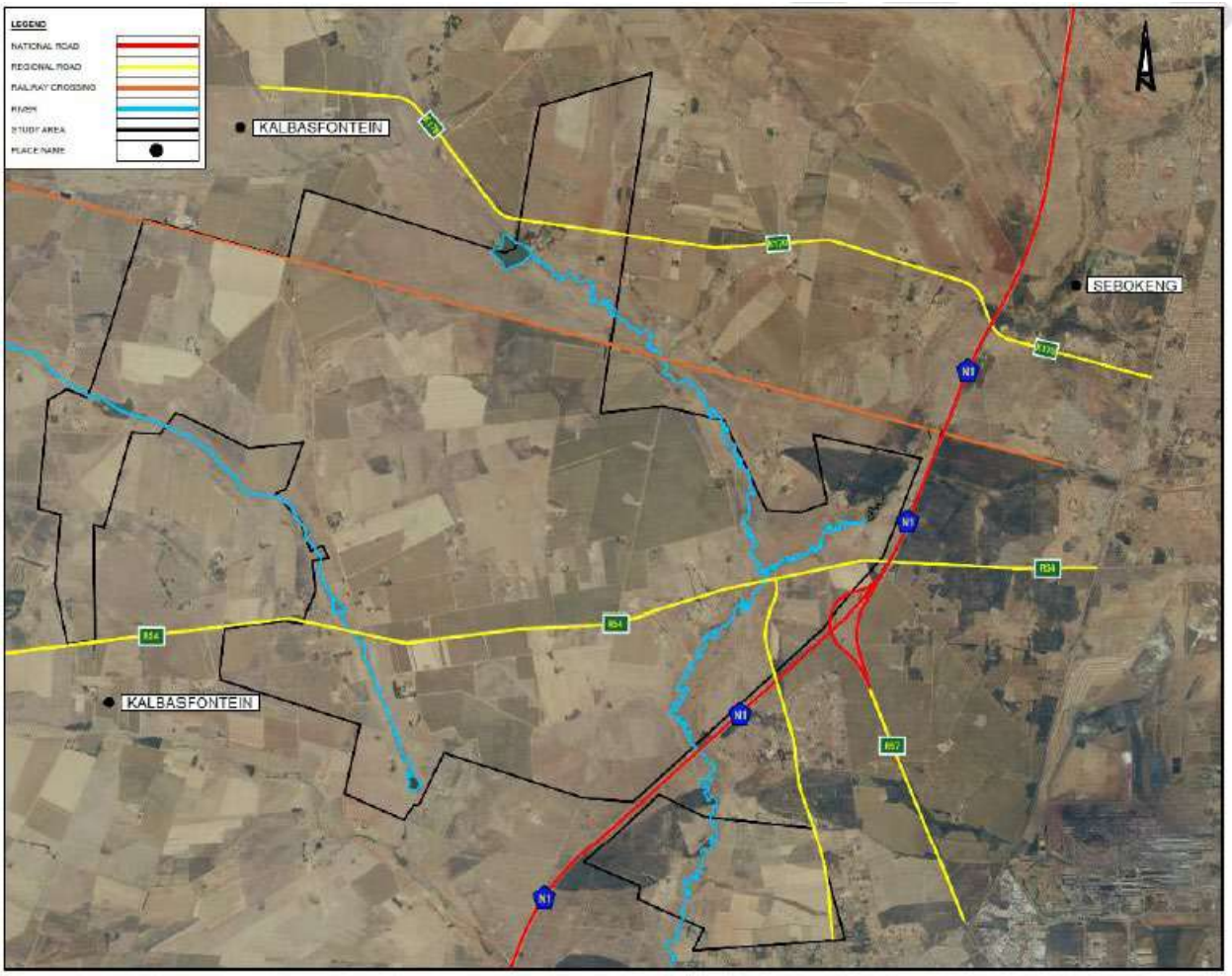


FIGURE 4-8: LAYOUT OF EXISTING MAJOR ROAD NETWORK (WSP, 2026)

4.1.6.2.1 External Roads

Several interchange options were assessed and refined based on safety, spacing and network performance. As a result, a Split Diamond Interchange (SDI) at the N1 / P24 (R54) / D2459 is deemed the preferred option subject to approval from SANRAL and the GDRT. As indicated above, **these applications do not form part of this EIA process and will be completed separate from this application**.

The SDI at the N1 / P24 (R54) / D2459 best satisfies operational efficiency, network integration, and planning objectives while meeting the necessary technical and regulatory criteria. It offers seamless integration between Sebokeng (east of the N1) and the planned airport development (west of the N1).

The SDI contains the following as indicated in **Figure 4-9**:

- N1 split diamond access interchange with the P24 and D2459:
  - The northern portion of the split diamond is an on- and off-ramp with the P24 serving traffic to and from the North on the N1. These two ramp terminals will be dual lane roundabouts for increased capacity and safety.
  - In the south an on-and off-ramp with the D2459 to the N1 will serve traffic from and to the south of the N1. These two ramp terminals will be dual lane roundabouts for increased capacity and safety, however, as this is a low volume interchange, priority stop-controlled junctions will also have ample spare capacity.
  - The two interchange components will allow connectivity between the N1 and the P24 and the D2459 on- and off-ramps.
- P24 and D2459 intersection:
  - This intersection is currently a priority-controlled T-junction, it is proposed to convert it to a narrow diamond grade separated junction with ramp terminal roundabouts.
- P24 (K178):
  - This road is currently a single carriageway; it is proposed to convert it to a dual carriageway from east of N1 interchange to west of the Airport (Access 1).

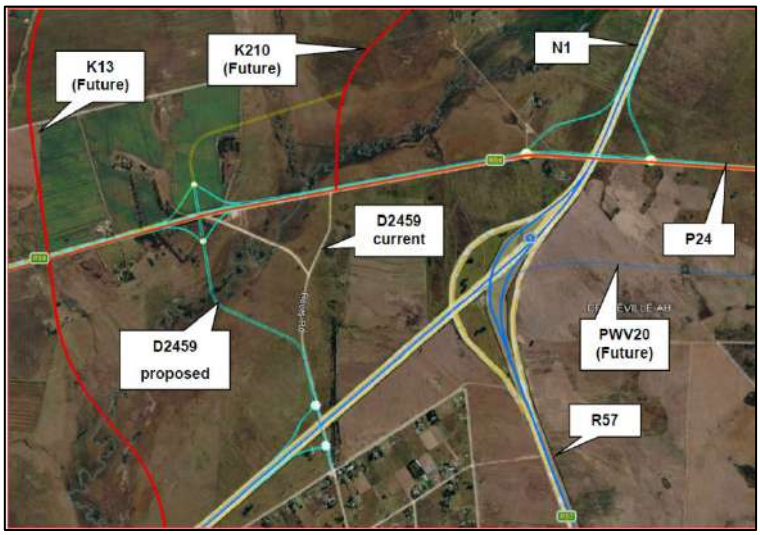


FIGURE 4-9: PROPOSED SPLIT DIAMOND INTERCHANGE (WSP, 2026)

4.1.6.2.2 Internal Roads

The accesses to the Vaal Aerotropolis from the P24 for Phase 1 are proposed as follows:

- Access 1 (**Figure 4-10**): The access will be a partial free flow grade separated junction with access from and to the P24 east of the interchange. The interchange will not have an on or off-ramp serving the P24 to and from the west; this movement will be accommodated at Access 2.
- Access 2 (**Figure 4-11**): This access will be a grade-separated diamond interchange with full accessibility from the P24 (to and from the east and west). All ramps will be free flowing with an additional grade separation between the westbound off-ramp from the P24, and the on-ramp westbound to the P24.

FIGURE 4-10: INTERNAL ACCESS ROAD 1 (EAST) (WSP, 2026)

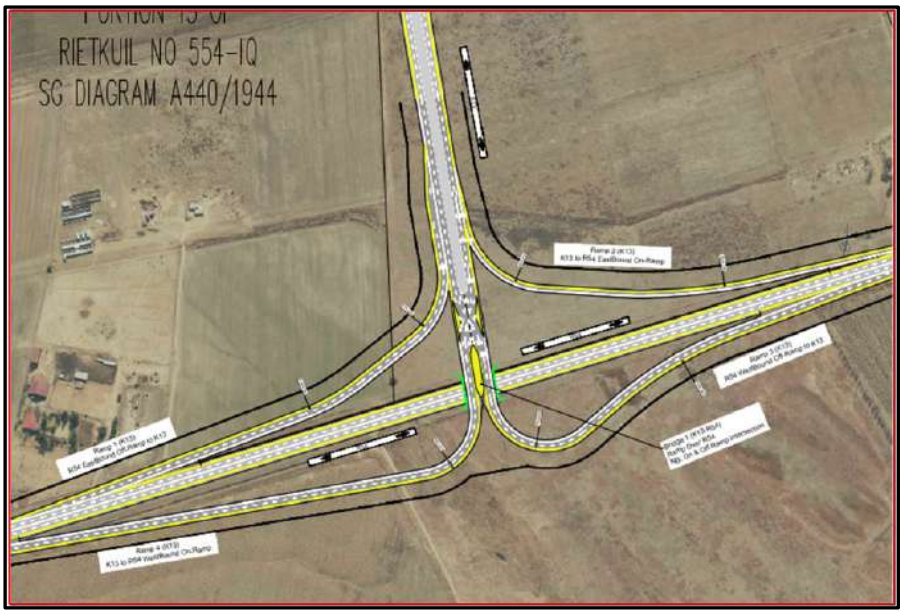


FIGURE 4-11: INTERNAL ACCESS ROAD 2 (WEST) (WSP, 2026)

Additionally, there are two major internal junctions within the Vaal Aerotropolis development. These two junctions connect with Access 1 and Access 2 from the P24 and provide access to the different areas of the development, such as the passenger terminal, freight/cargo terminals, airport city, trade zone and Agri-zones (**Figure 4-12**).

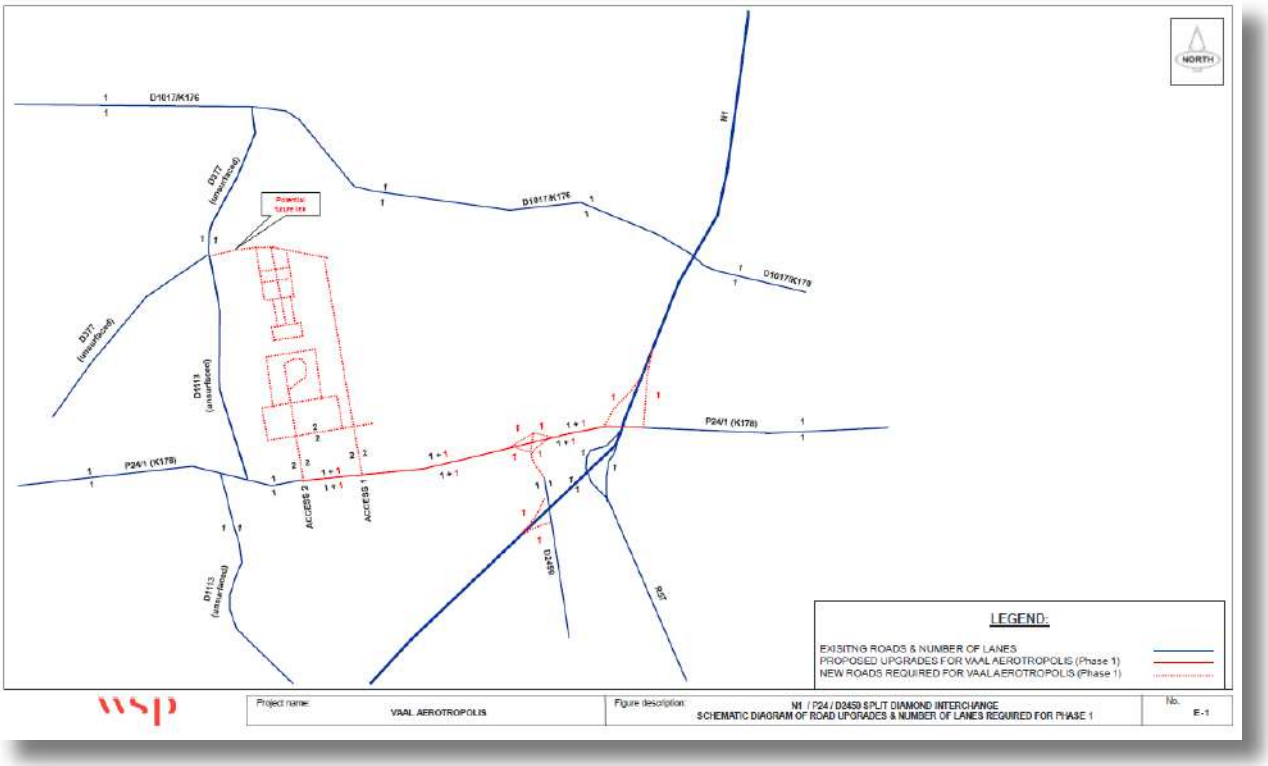


FIGURE 4-12: SCHEMATIC DIAGRAM OF ROAD UPGRADES AND NUMBER OF LANES REQUIRED FOR PHASE 1 (WSP, 2026)

4.1.6.3 STORMWATER MANAGEMENT

A Stormwater Management Plan (SWMP) has been developed by WSP Group Africa (Pty) Ltd to ensure that the development will minimise environmental impacts, minimise the risk of flooding and protect receiving water bodies against negative influences. This plan broadly focuses on two zones – Aerotropolis Precinct and Road Interchanges.

4.1.6.3.1 Aerotropolis Precinct

Based on topography and sub-catchments identified, three (3) main stormwater outfall locations were identified for the site. These are summarised below, as can be seen in **Figure 4-13** below.

- To the northeast, below the existing dam (26°34’43’’ S; 27°43’14’’ E).
- To the east near the P24 (R54) (26°35’45’’ S; 27°44’48’’ E).
- To the southwest near the existing dam (26°37’24’’ S; 27°40’58’’ E).

Ultimately, catchment B and C were consolidated, and flows will be routed to the same outfall point (Outfall 2 in **Figure 4-13**) while catchment A and its associated outfall were retained (Outfall 3 in **Figure 4-13**).

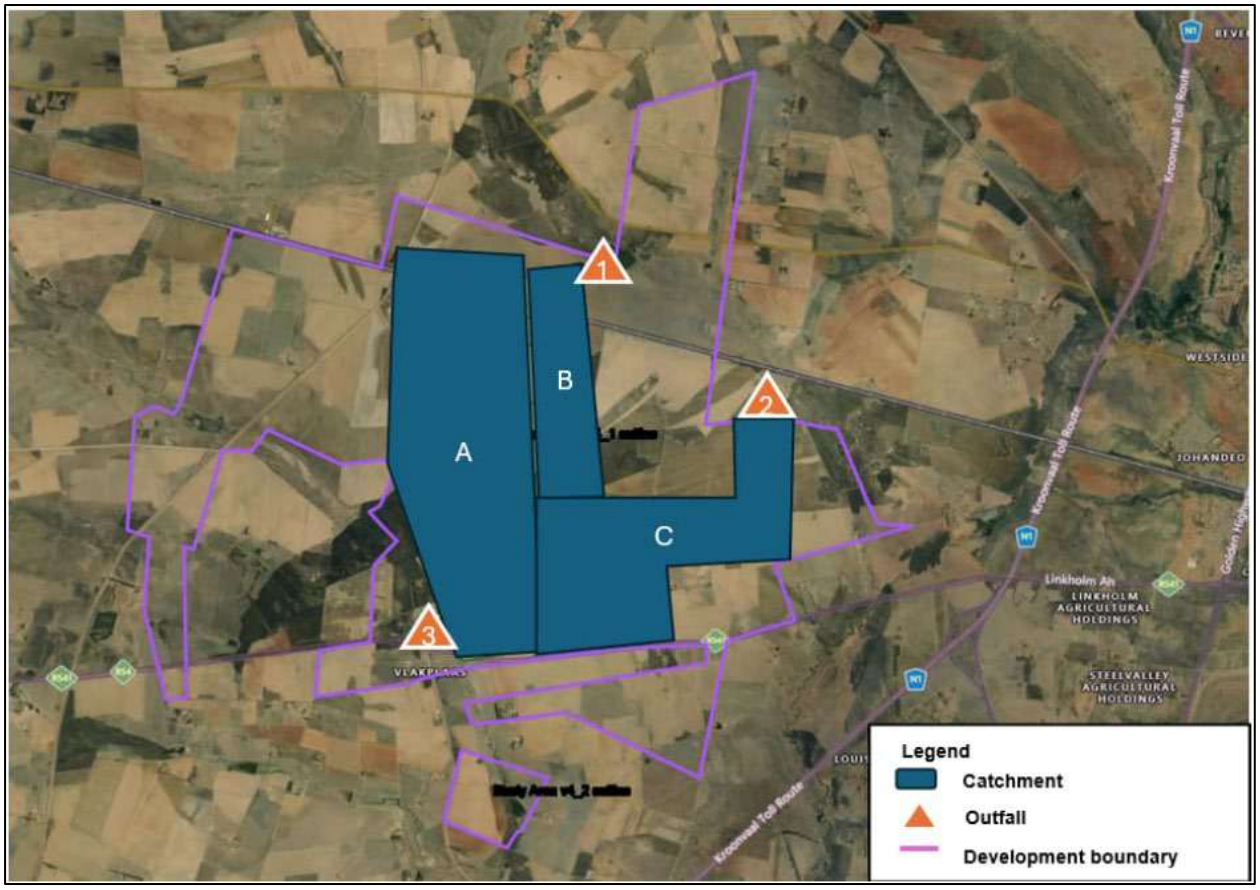


FIGURE 4-13: STORMWATER CATCHMENT DELINEATION AND OUTFALL MAP (WSP, 2026)

In terms of the Vaal Aerotropolis precinct itself (**Figure 4-14**), it is proposed that i) major and minor stormwater routes will be interlinked to form the bulk stormwater services, ii) the minor routes will consist of drainage from the surrounding aerotropolis buildings, runways, parking areas and internal road networks, iii) stormwater runoff will be directed from the minor routes into the major routes, iv) internal roads will have a chamber directing flow along the kerbs along the road towards catchpits to facilitate drainage for the full extent of the internal roads, and v) internal roads will discharge to roadside channels and convey attenuated flow for discharge into the surrounding watercourses.

The minor system, in accordance with Emfuleni Municipality guidelines, will be able to accommodate the 1 in 50-year return period. It will consist of Class 100D 900 mm diameter pipes (SANS 677), contain kerbs for collecting run-off along internal roads and include channels along the major internal roads. Run-off from taxiways and runways will be diverted towards strategically placed catch pits and dry swale systems to reduce surface stormwater volumes.

The major system will be comprised of a grid system containing multiple catch pits and specific airside drainage systems to collect runoff through the minor network. This system will consist of 100D 1 350 mm diameter concrete pipes (SANS 677) specifically designed to maximise flow movement away from the runway.

An attenuation dam (dry detention basin) was designed for Outfall 2, since this area will cater for the eastern half of the development and will include runways and future Agri-zones. The attenuation dam will have an active volume of 950 Mℓ, cover an estimated area of 29 ha, and have a maximum depth of 4 m.

FIGURE 4-14: PROPOSED STORMWATER MANAGEMENT LAYOUT PLAN

4.1.6.3.2 Road Interchanges

The development of the proposed aerotropolis demands that existing access roads be upgraded / expanded and that a new access point to and from the N1 highway be created (refer to Section 4.1.6.2 above). Any alterations in the road network will result in changes in the adjoining drainage.

The proposed drainage system will consist of new channels, culverts, and one bridge at the P24(R54) / D2459 interchange (**Figure 4-15**). The proposed drainage system will tie into existing drainage, which may require upgrades based on the flow volumes generated.

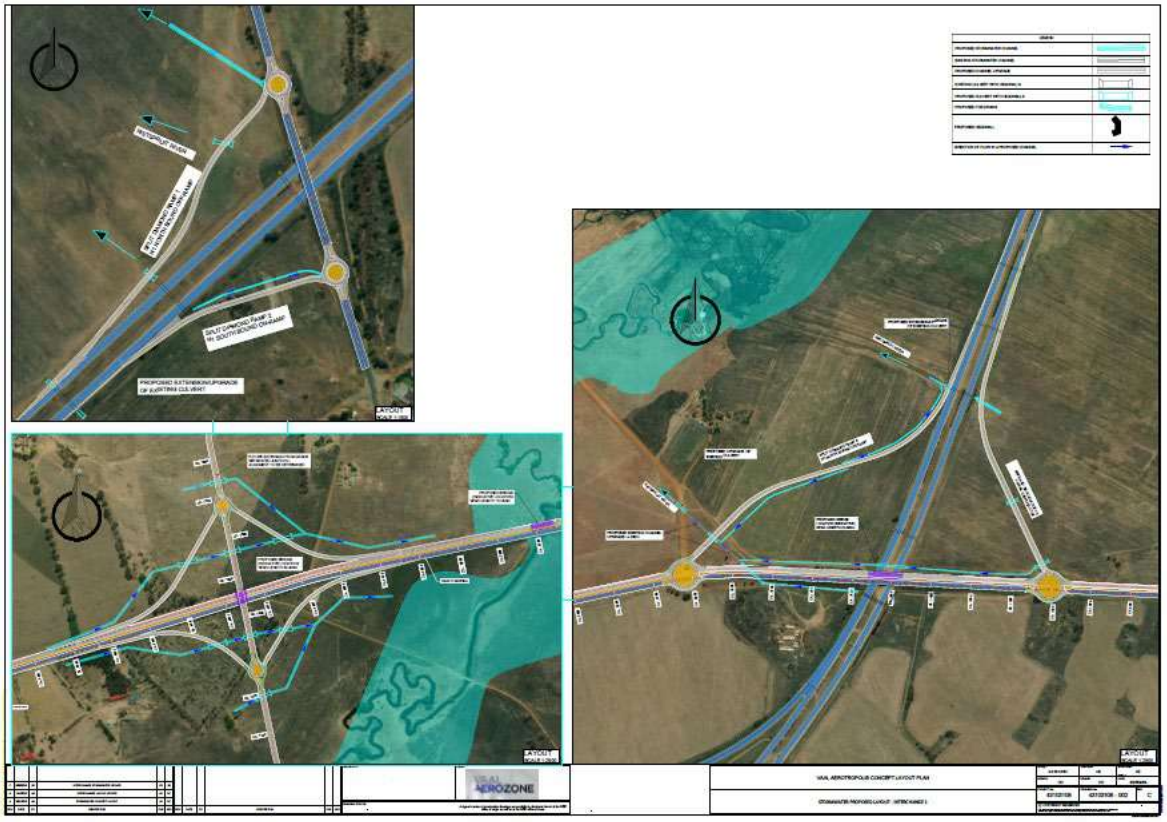


FIGURE 4-15: PROPOSED STORMWATER MANAGEMENT AT VARIOUS INTERCHANGES

4.1.6.3.3 Summary

Stormwater management of the Vaal Aerotropolis will be designed with the overall development context in mind. The development will encompass minor and major systems designed for the recommended 1 in 50-year return period, with a 30% climate change buffer added. Runoff calculations will be based on the symmetrical rainfall distribution in a 24-hour period, however, it is expected that post-development flows will be much larger than pre-development flows. As such, attenuation, erosion control and water quality remediation of post-development flows will be considered in the final stormwater management plan.

4.1.6.4 ELECTRICITY

The proposed development is estimated to have a maximum energy demand of approximately 50 Mega Volt-Amperes (MVA) by the end of Phase 3. During Phase 1 however, the development will be limited to an initial 20 MVA supply. The primary source of power shall be supplied by ESKOM via a 132/11kV bulk intake substation configured with three transformer bays, of which:

- Two 40MVA transformers are to be installed initially to satisfy the Phase 1 demand (20MVA), and
- The third transformer position is reserved for future installation, allowing capacity expansion toward the ultimate demand without major substation redesign.

Phase 1 specifically requires a dedicated bulk electrical supply which can be defined as:

- Notified Maximum Demand (NMD): 20 000 kVA
- Connection Voltage Level: 11kV (delivery)
- Upstream Connection Level: 132 kV transmission / distribution interface.

In addition to the above-mentioned power supply scope, existing 88kV infrastructure will be realigned along the northern boundary of the site. This involves the construction of approximately 15km of new overhead lines, decommissioning and dismantling of existing infrastructure within the development area, and implementation of ESKOM-controlled connection works and servitude adjustments.

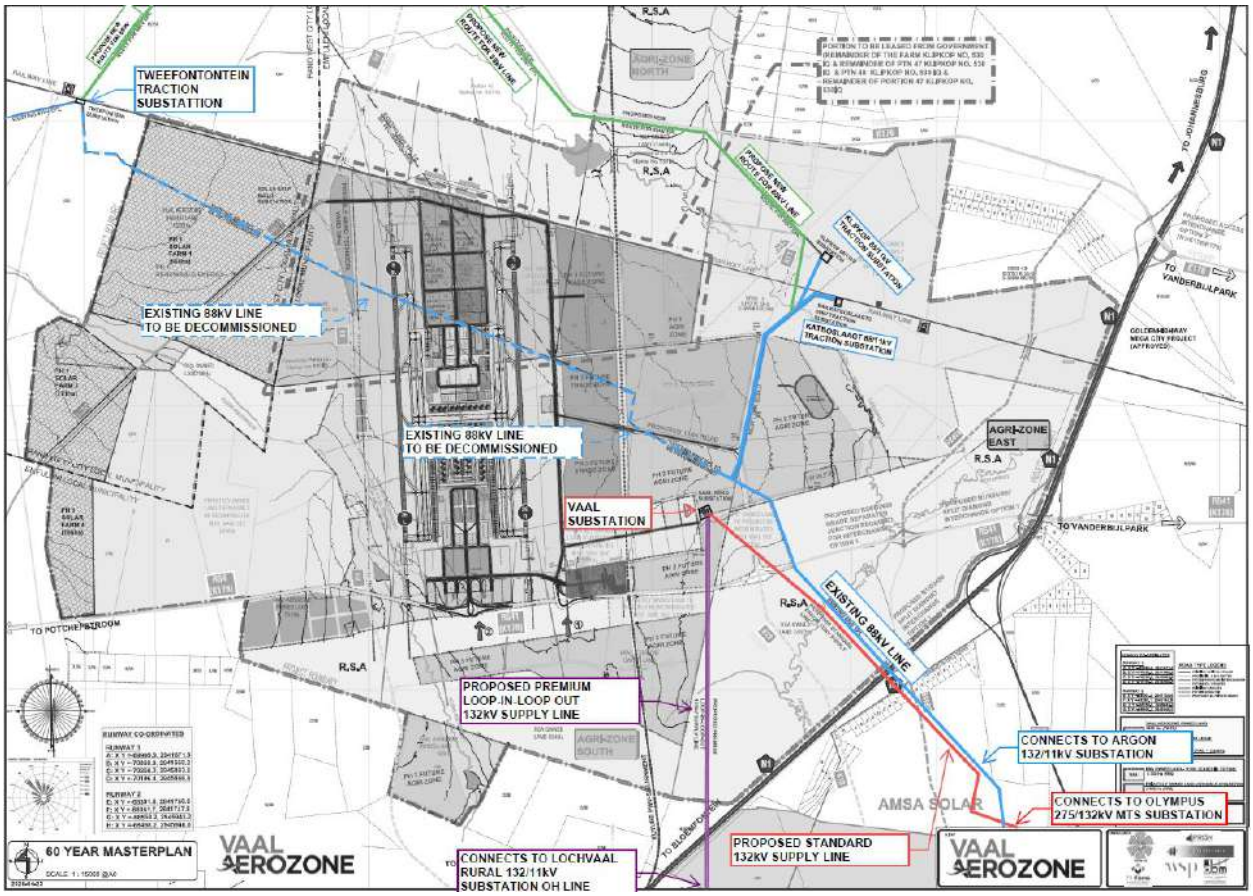


FIGURE 4-16: PROPOSED ELECTRICAL INFRASTRUCTURE

In terms of The Vaal Aerotropolis' electricity demand and supply, relevant environmental authorisations will be obtained. These will follow individual separate applications as per legislative requirements [5].

[5] *Environmental Authorisation to be completed for electricity infrastructure – Separate Process – In Progress*

4.1.6.5 WASTE

Emfuleni Local Municipality has formally confirmed that it will provide municipal solid waste removal services to the proposed Vaal Aerotropolis development. A total of three waste collection zones has been allocated, comprising a total surface area of 3000 m², which will allow Vaal Aerotropolis to store on-site waste until such time as the municipality can collect it[6].

In support of the above, an Integrated Waste Management Plan (IWMP) has been developed by WSP consulting engineers specifically for the proposed project. The plan aligns with the waste hierarchy, international best practice, and South African legislation while supporting environmental authorisation and future operational implementation.

It is proposed that waste management prioritises avoidance, reuse, recycling, recovery and lastly disposal, and be applied pragmatically, based on operational feasibility rather than rigid targets. The focus should be on high-volume, repeatable waste streams (e.g. packaging, organics, construction waste), with circular initiatives implemented gradually, based on market availability and operational readiness. All waste generators (airport operators, tenants, airlines, contractors) will be legally responsible for proper handling, storage, transport and disposal of their respective waste.

The key waste streams that have been identified are:

- Municipal Solid Waste (MSW): general, non-hazardous waste from terminals, offices, retail and logistics areas, managed through Emfuleni Local Municipality services.
- Sewerage, Wastewater and Treatment Residuals: includes sewage, sludge, grit, and screenings generated from on-site wastewater treatment systems, treated as controlled waste streams (discussed under Section 4.1.3.1.2).
- Waste from Aircraft Operations and Deplaned Waste: generated from aircraft cabins and galleys, requiring strict handling, sealed storage and rapid removal due to hygiene and airside safety constraints.
- International Catering Waste (ICW): A high-risk, regulated waste stream requiring strict segregation, secure storage and disposal through licensed facilities due to biosecurity risks.
- Organic and Biodegradable Waste: includes food waste, agricultural residues and green waste, with potential for future reuse or composting, subject to approvals.
- Construction and Demolition (C&D) Waste: a recurring, high-volume stream across all development phases, requiring material reuse and recycling-focused management.

[6] *The National Environmental Management: Waste Act (Act 59 of 2008) Norms and Standards will be adhered to.*

- Hazardous and Industrial Waste: includes chemicals, contaminated materials and maintenance residues, requiring strict classification, containment and licensed disposal.
- Aviation-Specific and Special Waste: includes medical waste, spill residues, e-waste and other specialised streams requiring licensing/permits, dedicated handling and compliance controls.

The IWMP for the Vaal Aerotropolis provides a robust, practical and strategically phased framework that ensures all waste streams are managed in a manner that is compliant, operationally efficient, and environmentally responsible. Ultimately, the plan establishes a strong foundation for sustainable waste management, while maintaining the flexibility to adapt, optimise, and improve resource efficiency over time as the Vaal Aerotropolis evolves into a fully integrated logistics and economic hub.

4.1.6.6 AVIATION FUEL STORAGE FACILITY

Aviation fuel storage requirements would ordinarily be determined based on the fuel demand associated with peak-day aircraft operations, together with an appropriate reserve capacity to provide resilience in the event of a disruption to the normal fuel supply.

At the current stage of the Vaal Aerotropolis development, detailed operational and fuel demand data are not yet available. Accordingly, the fuel storage and associated land requirements have been established using a benchmarking approach.

The benchmarks considered include the existing fuel farm facilities at O. R. Tambo International Airport and King Shaka International Airport, as well as comparable international airports with passenger throughput of up to approximately 45 million passengers per annum (mppa).

Based on the benchmark assessment, an indicative land requirement of approximately 700 m² per mppa has been adopted for aviation fuel storage and associated facilities at Vaal Aerotropolis. This allowance assumes a greenfield airport development incorporating a hydrant-based aircraft refuelling system, with provision for conventional Jet A-1 and Sustainable Aviation Fuel (SAF).

The adopted allowance is lower than the benchmark requirements observed at O. R. Tambo and King Shaka International Airports, where aircraft refuelling is predominantly undertaken using refuelling bowsers. The proposed hydrant-based system is expected to require less land for fuel distribution, and associated vehicle movements and facilities.

The relevant impact assessment – Air Quality Impact Assessment – and licensing for the storage of fuel, is in process in parallel with this EA application process.

4.2 LISTED ACTIVITIES

In terms of the EIA Regulations, 2014 (as amended) and Listed Activities, 2017 (as amended) (introduced in Section 2.2.1), the activities that are triggered under the Listing Notices for this proposed development are provided in **Table 4-7**. Refer to Section 2.2 for a description and overview of the applicable legislative framework.

TABLE 4-7: DESCRIPTION OF THE LISTED ACTIVITIES

Listing Notice	Activity	Description of Listed Activity	Interpretation
NEMA: Listing Notice 1 (requires a Basic Assessment)			
GN R 327 7 April 2017 (as amended)	9	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more;	The bulk water distribution network will be comprised of 90 mm to 250 mm diameter pipelines that will allow the boreholes, WWTW, and airport precinct to be interconnected. The minor stormwater system will consist of 900 mm diameter pipes while the major stormwater system will consist of 1 350 mm diameter concrete pipes.
	10	The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, wastewater, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more;	Sewer reticulation will range between 0.3m to 0.45m diameter pipelines with some sections exceeding 1km.
	11(i)	The development of facilities or infrastructure for the transmission and distribution of electricity – (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.	Phase 1 of the development will require an initial 20 MVA supply which will include the re-alignment of an existing 88kV powerline.
	12	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— m) within a watercourse;	The attenuation dam with an active volume of 950 Mℓ, covering an estimated 29 ha, and having a maximum depth of 4 m is planned to be constructed within the regulated area of a wetland.

Listing Notice	Activity	Description of Listed Activity	Interpretation
		n) in front of a development setback; or o) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	Several other forms of infrastructure (i.e., stormwater infrastructure, runways, roads, etc) will be built within 32m of a watercourse.
	13	The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.	The attenuation dam with an active volume of 950 Mℓ, covering an estimated 29 ha, and having a maximum depth of 4 m will be constructed within the regulated area of a wetland.
	14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	An on-site aviation fuel farm will be developed which will contain three 2 000 m^3 tanks resulting in a total storage capacity of 6 000 m^3.
	19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	Airport associated infrastructure will cross and/or impede several watercourses.
	24	Development of a road – (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;	Several internal roads will be upgraded to dual-carriageways, and new roads (i.e. main boulevard, access and other arterials to the trade centre) are proposed.
	27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.	A total of 13 farm portions will be affected spanning an approximate area of 4 750 hectares. Several areas herein will be cleared for construction purposes.
	28 (ii)	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	This activity is triggered as the site occurs outside the urban area and is greater than 1 ha in extent. Historically the site has been utilised for agricultural purposes.
	56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre- (i) where the existing reserve is wider than 13,5 metres; or	Several internal roads will be upgraded to dual-carriageways, and new roads (i.e. main boulevard, access and other arterials to the trade centre) are proposed.

Listing Notice	Activity	Description of Listed Activity	Interpretation
		(ii) where no reserve exists, where the existing road is wider than 8 metres;	
NEMA: Listing Notice 2 (requires a Scoping and EIR)			
GN R 325, 7 April 2017 (as amended)	4	The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic meters.	An on-site aviation storage facility will be constructed which will contain three 2 000 m^3 tanks resulting in a total storage capacity of 6 000 m^3.
	6	The development of facilities or infrastructure for any process or activity which requires a permit or license or an amended permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent.	This activity is triggered as the fuel storage facility will require an Air Emissions License as activities specified in the NEM:AQA is triggered by the operation.
	7	The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods— (ii) in liquid form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 50 cubic metres per day.	This activity is triggered as the operation will utilise a hydrant system for the transport of fuel from the fuel storage facility to the individual aircraft stands. The pipeline lengths for the required system will exceed the specified 1000 meters and throughput of 50 cubic meters.
	8	The development of— (i) airports; or (ii) runways or aircraft landing strips longer than 1,4 kilometres.	The proposed development involves the development of an international airport with a runway which is 4.2 km in length.
	15	The clearance of an area of 20 hectares or more of indigenous vegetation.	A total of 13 farm portions will be affected spanning an approximate area of ± 4 750 hectares. Several areas herein will be cleared for construction purposes.
	16	The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the highwater mark of the dam covers an area of 10 hectares or more.	The attenuation dam with an active volume of 950 Mℓ, covering an estimated 29 ha, and having a maximum depth of 5 m will be constructed within the regulated area of a wetland.
	27	The development of a road— (iv) catering for more than one lane of traffic in both directions.	Several internal roads will be upgraded to dual-carriageways, and new roads (i.e. main boulevard, access and other arterials to the trade centre) are proposed.
NEMA: Listing Notice 3 (requires a Basic Assessment)			
GN R 324 7 April 2017	2(c)(ii)(iv)(v)(vi)	The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres. –	An on-site WWTW is proposed including a 20 000 m^3 raw water storage reservoir, an 8 000 m^3 concrete reservoir for treated water storage, a 2 000 m^3 tower for adequate

Listing Notice	Activity	Description of Listed Activity	Interpretation
(as amended)		(ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004) (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority.	pressure supply, and a 1 500 m^3 fire storage reservoir will be constructed.
	3(c)(ii)(iv)(v)(vi)	The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower – a) is to be placed on a site not previously used for the purpose; and b) will exceed 15 meters in height. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority.	Masts and other telecommunications infrastructure exceeding 15m are associated with airports and will most likely be constructed.
	4(c)(ii)(iv)(v)(vi)(vii)	The development of a road wider than 4 metres with a reserve less than 13,5 metres. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority. (vii) Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas.	This activity is triggered due the proposed development of roads wider than 4 meters. In addition, sections of the site are classified as Ecological Support Areas and Critical Biodiversity Area (CBA).

Listing Notice	Activity	Description of Listed Activity	Interpretation
	6(c)(ii)(iv)(v)(vi)(viii)	The development of resorts, lodges, hotels, tourism or hospitality facilities that sleeps 15 people or more. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority. (viii) Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas	This activity is triggered due the proposed development of a 90-room hotel on site. In addition, sections of the site are classified as Ecological Support Areas and Critical Biodiversity Area (CBA). Furthermore, according to GAPA, the site has a high potential for agriculture.
	10(c)(ii)(iv)(v)(vi)(vii)	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority. (vii) Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas.	This activity is triggered due the proposed development of the required fuel storage facility for the proposed airport. In addition, a few sections of the site are classified as Ecological Support Areas and Critical Biodiversity Area (CBA).
	12(c)(i)(ii)	The clearance of an area of 300 square metres or more of indigenous vegetation. – (i) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004. (ii) Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans.	A total of 13 farm portions will be affected spanning an approximate area of 4 750 hectares. Several areas herein will be cleared for construction purposes. In addition, sections of the site are classified as Ecological Support Areas and Critical Biodiversity Area (CBA).

Listing Notice	Activity	Description of Listed Activity	Interpretation
	14(c)(ii)(iv)(v)(vi)	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—(a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority.	The attenuation dam with an active volume of 950 Mℓ, covering an estimated 29 ha, and having a maximum depth of 4 m will be constructed within the regulated area of a wetland.
	18(c)(ii)(iv)(v)(vi)(vii)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. – (ii) National Protected Area Expansion Strategy Focus Areas; (iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation plan or in bioregional plans. (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act 10 of 2004). (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority. (vii) Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas.	Several internal roads will be upgraded to dual-carriageways, and new roads (i.e. main boulevard, access and other arterials to the trade centre) are proposed. In addition, sections of the site are classified as Ecological Support Areas and Critical Biodiversity Area (CBA).

4.3 PROJECT LIFE-CYCLE

To adequately consider the impacts associated with the proposed development, the major activities during each phase of the project life-cycle are listed below:

Approval Applications and other Feasibility Studies:

- Technical, economic and environmental screening of proposal and alternatives.
- Development of Preliminary Design Reports.
- Environmental, Social and Geotechnical Assessments.
- Establishment of township, Local Spatial Development Framework (LSDF), and Special Economic Zone (SEZ).
- Air traffic forecasting.
- Discussions with affected / adjacent landowners and IAP's (where applicable).
- Environmental Authorization and WULA processes.

Pre-construction Phase:

- Detailed layouts and services designs.
- Procurement process for Contractors.
- Land acquisition (where necessary).
- Procurement of other necessary materials.
- Appoint Environmental Control Officer (ECO).
- Liaison with specialists (where applicable).

Construction for Phase 1:

- Appointments and site camp set up:
  - Set up site camp with temporary offices and administrative facilities.
  - Set up ablutions.
  - Set up access control, security; signage and lighting.
  - General materials storage and laydown areas.
  - Construction employment.
  - Change-houses, chemical toilets and showering facilities (linked to conservancy tanks – removal of contents by exhauster vehicle and disposal at permitted facility).
  - Temporary waste storage areas; these shall be established and managed in accordance with EMPr requirements to be developed in the EIA phase.
  - Sourcing of construction materials and equipment:
  - All bulk materials (aggregate, cement, steel etc.) will be sourced from existing lawful commercial sources; or should it be necessary separate applications for mining permits to allow for borrow pits will be undertaken prior to use.

- Excavation and earthworks:
  - Removal of existing surfacing material where necessary (topsoil, housing structures, agricultural fields, etc.) which could involve excavation below ground level.
  - Levelling and compaction using heavy machinery / earthmoving equipment.
  - Potential for excavations and trenching in order to lay of below ground level equipment (cables, pipes, sumps, drainage etc.).
  - Potential for excavation dewatering in the event of water-table interception.
  - Use of general mechanical equipment within construction areas (generators, cutting and welding equipment, compressors etc.).
  - Operating according to specifications
  - Adhere to all relevant legislations (OHSA, NEMA, BCEA, etc.).
  - Adhere to engineering specifications.
  - Implement all specialist recommendations and mitigation measures.

- Operation Phase:
  - Maintenance of infrastructure.
  - Expansion of infrastructure as Phases 2 and 3 are implemented.
  - Obtaining of permits / licenses / authorisations as Phases 2 and 3 implemented.

- Decommissioning Phase:
  Decommissioning of the development and associated services is not envisioned. However, should decommissioning be required the activity will need to comply with the appropriate environmental legislation and best practices at that time.

5. MOTIVATION FOR NEED AND DESIRABILITY

In terms of Section 2 (f) of Appendix 2 of GN 921 of 4 December 2014, this section discusses the need and desirability of the project which has been assessed in terms of Notice 891 of 2014 which is the updated guideline available regarding need and desirability. In line with this, this section motivates the proposed airport in terms of the full suite of policies from national and provincial level to regional and local Spatial Development Frameworks.

5.1 OVERVIEW

In order to better understand the need and desirability, the proposed development needs to be properly understood. The proposed development is a mixed-use development based in the south-western regions of Gauteng that will comprise an Airport Precinct, Airport City, Agri-Zone, Trade Zone, and Ancillary Infrastructures (refer to Sections 1 and 4 for more information in this regard).

In terms of need, the requirement for the Vaal Aerotropolis is clear and compelling. It addresses critical economic, spatial and infrastructural challenges facing the Emfuleni region and aligns with national and provincial development priorities. It is deemed essential for the future prosperity of southern Gauteng and the broader national economy.

In terms of desirability, critical factors (i.e., the National, Provincial and Local legislative frameworks) influence existing and new developments. To that end, this project is in line with, but not limited to, the following:

- Spatial Planning and Land Use Management Act (No 16 of 2013) (SPLUMA) – the proposed development of an international airport in Emfuleni complies with the relevant principles of the act as it provides a uniform framework for spatial planning and land use management in South Africa, as well as promoting consistency and uniformity in procedures and decision-making.
- Sedibeng Spatial Development Framework (SDF) – this SDF supports i) the development of SEZs, ii) the alignments of municipalities' SDFs and iii) appropriate major current and new development initiatives; all of which are applicable to Vaal Aerotropolis. The proposed Vaal Aerotropolis will address issues related to linkages, transport modes and storage facilities, as it provides for linkages to not only local but also international markets, with easy transport modes via railway and road transport to and from the Aerotropolis.
- District Development Model One Plan – the Vaal Aerotropolis has been described as a catalytic project in that it intends to generate development momentum and attract further investment. Hence, it supports the vision and strategies of the One Plan.
- Vaal-River Regional Spatial Development Framework – this SDF has clearly defined spatial planning and economic development objectives which are in support of the establishment of an

aerotropolis in the Vaal River region. Vaal Aerotropolis is seen as an important flagship project within the Vaal River region.

- Emfuleni Spatial Development Framework – the proposed site falls within the urban development zone as well as the area demarcated for the development of an airport. The mixed land use development will invest in and strengthen existing communities and achieve more balanced regional development and facilitate the provision of a variety of transportation choices. In addition, Emfuleni approved the LSDF for the Vaal Aerotropolis in January 2026.
- Gauteng Spatial Development Framework and Provincial Growth and Development Strategy – the provincial SDF highlighted that Gauteng is a "freight and logistics hub". Thereby the Vaal Aerotropolis aligns with the province's vision.
- Growing Gauteng Together (GGT) (2030) – the Vaal Aerotropolis is seen as a main pillar of future economic growth for the southern Gauteng corridor due to its dedicated international cargo, agricultural, Agri-processing and logistical aspects.
- The National Department of Transport, through its approved revised Strategic Plan (2020-2025), promotes the growth of the economy through economic initiatives such as the aerotropolis concept, airport cities, and SEZ linked to international airports.

The proposed Vaal Aerotropolis will therefore contribute to the local, regional & national economy as well as provide an additional international entry point for the Gauteng province, and South Africa as a whole.

5.2 NEED AND DESIRABILITY TABLE

In addition to the above, the following questions have also been addressed in line with the Guideline for Need and Desirability (Notice 891 of 2014) (**Table 5-1**).

TABLE 5-1: NEED AND DESIRABILITY

Question from the Need and Desirability Guideline	Response
Securing ecological sustainable development and use of natural resources	
How will this development (and its separate elements / aspects) impact on the ecological integrity of the area?	The site is not considered to be pristine as it has been degraded by historical agricultural use. Several studies, including Fauna, Flora, Avia-Faunal and Terrestrial Biodiversity Assessments, Hydropedology Assessment, Aquatic- and Wetland Impact Assessments were conducted and will be included in the EIA. These will assess the identified impacts in more detail.
How were the following ecological integrity considerations taken into account? • Threatened Ecosystems • Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries,	The Scoping Report includes a summary of the receiving environment (Section 3) which includes applicable information on: • Threatened ecosystems; • CBAs and ESAs;

Question from the Need and Desirability Guideline	Response
wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure, • Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs") • Conservation targets, • Environmental Management Framework, • Spatial Development Framework, and • Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.	• Sensitive features such as rivers and wetlands; and • Socio-Economic Information This was used to identify potential sensitivities which required further assessment by a specialist. Based on this, additional specialist studies to be include in the EIA Phase are: • Agricultural Assessment • Aquatic Assessment; • Fauna, Flora, Avi-Faunal and Terrestrial Biodiversity Assessment; • Geohydrological Assessment; • Hydropedology Assessment; and • Wetland Assessment. The findings of these studies will be incorporated into the development layout where necessary.
How will this development disturb or enhance ecosystems and / or result in the loss or protection of biological impacts that could not be avoided altogether, what measures were explored to minimize and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The site is not considered to be pristine as it has been degraded by historical agricultural use. Regardless, some impacts have been foreseen which will require mitigation / remedy measures. Several studies, including Fauna, Flora, Avia-Faunal and Terrestrial Biodiversity Assessments, Hydropedology Assessment, Aquatic- and Wetland Impact Assessments were conducted and will be included in the EIA. These will assess the identified impacts in more detail. All mitigation measures suggested by the specialists will be incorporated into the Final EIA and its associated EMPr.
How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimize and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Significant environmental issues for further consideration and prioritisation during the EIA stage have been discussed in Section 8.1. This focusses on the EIA Phase and ensures that potential impacts relating to the proposed development are determined through specialist studies where necessary. A detailed impact assessment (highlighting both negative and positive impacts) will be undertaken as part of the EIA Phase.
What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimize, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	Refer to 4.1.3.5 for a discussion on the types of waste, as well as management thereof, on the site during both construction and operational phases. The EMPr which will be compiled during the EIA Phase will include waste management measures designed to minimise, reuse and/or recycle waste produced.

Question from the Need and Desirability Guideline	Response
How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimize and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	It is expected that the proposed airport will result in increased pressure on non-renewable natural resources, particularly during the operational phase. A detailed impact assessment will be undertaken during the EIA Phase. The intent of the developer is to develop a facility with a 4-star green rating, this will include energy- and water efficiency, use of renewable energy, waste reduction and recycling. The planned Agri-Zone will feature an agricultural cluster with greenhouses and hydroponic facilities, intended to offset the loss of agricultural land to the development, as well as contribute to mitigating the carbon impact of the aerotropolis. Treated Wastewater can potentially be used for irrigation, and food waste used for compost in the Agri-zone, in an effort to enhance positive impacts of the Agri-zone.
• How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardize the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimize the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? • Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth, or does it reduce resource dependency (i.e. de-materialized growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life) • Does the proposed use of natural resources constitute the best use thereof? Is the use	Several studies, including Fauna, Flora, Avia-Faunal and Terrestrial Biodiversity Assessments, a Hydropedology Assessment, Aquatic- and Wetland Impact Assessments were conducted and will be included in the EIA. These will assess the identified impacts in more detail. Additional renewable natural resources are expected to be consumed during both the construction and operational phases. Capacities and thresholds will, however, not be exceeded for the area. The development is in line with the Emfuleni SDF, and the approved Vaal SEZ, amongst others. A detailed impact assessment will also be undertaken during the EIA Phase.

Question from the Need and Desirability Guideline	Response
justifiable when considering intra- and intergenerational equity and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?). • Do the proposed location, type and scale of development promote a reduced dependency on resources?	
How were a risk-averse and cautious approach applied in terms of ecological impacts? • What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? • What is the level of risk associated with the limits of current knowledge? • Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	• A risk-averse and cautious approach is being undertaken. The following has reference: • Detailed Specialist Assessments are being conducted, to determine sensitive areas. Where possible, these will be avoided. • The specialist will identify gaps which will then be noted in both the specialist reports and EIA. • The detailed impact assessment which will be undertaken during the EIA Phase will specifically deal with gaps identified by specialists and/or lack of information through the assessment of 'Level of Confidence'. This assessment will also classify risks based on their assessed significance / importance. • The site-specific EMPr which will be compiled in the EIA Phase will provide numerous mitigation measures to ensure that impacts identified (even those considered to be a 'low' risk) can be further mitigated.
How will the ecological impacts resulting from this development impact on people's environmental right in terms following: • Negative impacts e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimize, manage and remedy negative impacts? • Positive impacts: e.g. improved access to resources, improved amenity, improved air or water	Significant environmental issues for further consideration and prioritisation during the EIA stage have been discussed in Section 8.1. Negative impacts, including but not limited to visual and noise impacts will be assessed by specialists and included in the EIA. Positive impacts (e.g., economic benefits, capital investments, accessibility, etc.) are already being investigated and will be appended in the EIA. A detailed impact assessment also will be undertaken as part of the EIA Phase and will provide more information on both the negative and positive impacts associated with the development.

Question from the Need and Desirability Guideline	Response
quality, etc. What measures were taken to enhance positive impacts?	
Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	The development of an aerotropolis can affect human wellbeing and livelihoods because communities and businesses depend on ecosystem services such as water, fertile soil, agriculture, biodiversity, wetlands, clean air and cultural heritage. If these resources are degraded or lost, the impacts can extend into the socio-economic environment. However, the Agri-zone, proposed Green Star measures, ecological buffers, careful spatial planning and ongoing environmental monitoring is expected to help reduce these impacts. During the EIA Phase, more detailed assessments – including public participation, specialist studies and impact assessment – will be completed, and will inform the final EIA Report.
Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	Large portions of the site are not ecologically pristine, as it is used for agricultural purposes. It is not expected that the development will have a hugely negatively impact on the ecological integrity objectives of the area. Whilst the site falls within an ESA and CBA area as well as the historical extent of a threatened ecosystem, the site visit indicates that the area itself has been altered by historical agricultural use. Specialist Assessments, including Fauna, Flora, Avia-Faunal and Terrestrial Biodiversity Assessments, a Hydropedology Assessment, Aquatic- and Wetland Impact Assessments will be conducted and included in the EIA. It should also be noted that the proposed development is in line with the Emfuleni SDF, 2024, amongst others, which confirms the benefit of the proposed aerotropolis along with an Agri park in the earmarked location of the development.
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	Alternatives relating to site, layout, and technology are being assessed for each aspect (e.g., water, sewer, roads, etc.) as part of the Scoping and EIA process. Several options are being investigated in terms of cost and practicality. Each alternative will be thoroughly assessed as part of the EIA process to determine the best practicable environmental option.

Question from the Need and Desirability Guideline	Response
Promoting justifiable economic and social development	
What is the socio-economic context of the area, based on, amongst other considerations, the following considerations? • The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any strategic plans, frameworks of policies applicable to the area, • Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.). • Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and • Municipal Economic Development Strategy ("LED Strategy").	Please see Section 3.8 of the Scoping Report which provides an overview of the socio-economic context of the area, as well as Sections 2.10.4 and 5.1 which include information on applicable SDFs, Plans and Visions for the area.
Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? • Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	In summary the proposed development will result in in capital investment of R82.18 billion in the area which will have a multiplier effect in the region. In addition, the proposed development will create several short-term employment opportunities (± 118 498 jobs) as well as several long-term employment opportunities (± 19 838 jobs). This is especially important in light of the high unemployment rate in the area. Vaal Aerotropolis is also included with the Sedibeng District Municipality and Emfuleni Local Municipality's Spatial Development Framework (2024).
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	The proposed project is in line with the Emfuleni SDF, among others, which includes an aerotropolis and Agri park zone within the earmarked location. In addition, through the construction of the development, local community members will be employed. The development will present an estimated 118 498 construction-related and 19 838 operation-related jobs to the surrounding communities. There will also be a number of positive economic multiplier effects through the capital investment required for the development. A Heritage Impact Assessment will also be conducted, including recommendations, to safe-guard the area's culture and sense-of-place.
Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-	Vaal Aerotropolis is planned to be implemented in three phases across a 60-year timeframe. This will provide

Question from the Need and Desirability Guideline	Response
term? Will the impact be socially and economically sustainable in the short- and long-term?	jobs in the long-run related to construction, manufacturing, logistics and production to name a few. Thereby, the project will be economically sustainable in both the short- and long-term. A detailed impact assessment will be undertaken in the EIA Phase and will include an assessment of social and economic impacts.
• In terms of location, describe how the placement of the proposed development will: • Result in the creation of residential and employment opportunities in close proximity to or integrated with each other • Reduce the need for transport of people and goods • Result in access to public transport or enable non-motorized and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport), • Compliment other uses in the area • Be in line with the planning for the area, • for urban related development, make use of underutilized land available with the urban edge • optimize the use of existing resources and infrastructure, • opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement), • discourage "urban sprawl" and contribute to compaction/densification, • contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, • encourage environmentally sustainable land development practices and processes, • take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),	The Vaal Aerotropolis will be able to cater for cargo aircraft in addition to its other services. This is something that OR Tambo and Lanseria airports find challenging due to area / perimeter constraints. Hence Vaal Aerotropolis' location is strategic since it offers space and expansion potential while still being nestled within the Gauteng Province. The proposed project is in line with the Emfuleni SDF, among others, which includes an aerotropolis and Agri park in the proposed area. The development will present an estimated 118 498 construction-related and 19 838 operation-related jobs opportunities to the surrounding communities. Thus, many people from the area will not have to travel far for job opportunities and allows the community to further develop as per the Emfuleni SDF. The proposed development occurs close to the N1, which allows for easy access. New services and infrastructures have already been planned and approved for the area to accommodate for expansion. Parts of the area have already been historically transformed. During the EIA Process, specialist studies including Fauna, Flora, Avia-Faunal and Terrestrial Biodiversity Assessments, a Hydropedology Assessment, Aquatic- and Wetland Impact Assessments were conducted and will be included in the EIA. The findings and mitigation measures will be incorporated into the EIA and associated EMPr. A Heritage Impact Assessment will also be undertaken to ensure the proposed development does not impact on the sense of history, sense of place and overall heritage of the area and the socio-cultural and cultural-historic characteristics of the site.

Question from the Need and Desirability Guideline	Response
• the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential), • impact on the sensitivities of the area, and • in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	The proposed development will create employment during construction and result in a number of economic multiplier effects through the capital investment of an anticipated R82.18 billion.
• How were a risk-averse and cautious approach applied in terms of socio-economic impacts? • What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? • What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge? • Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Other than the Heritage Impact Assessment, a Visual Impact Assessment and Noise Impact Assessment will be undertaken. Furthermore, a risk-averse and cautious approach has been undertaken. The following has reference: • The Heritage Impact Assessment will identify gaps which will then be noted in both the specialist report and EIA. • The Visual and Noise Impact Assessments will be utilised in the design and placement of the development. • The impact assessment which will be undertaken during the EIA Phase will specifically deal with gaps identified by specialists and/or lack of information through the assessment of 'Level of Confidence'. • The EMPr which will be compiled during the EIA Phase will provide numerous mitigation measures to ensure that impacts identified to be a 'low' risk can be further mitigated.
How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: • Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimize, manage and remedy negative impacts? • Positive impacts. What measures were taken to enhance positive impacts?	A Noise Impact Assessment and Visual Impact Assessment will be undertaken and will be included in the EIA. A detailed impact assessment will be undertaken in the EIA Phase and will include an assessment of social and economic impacts (both positive and negative). It is not expected that there will be negative socio-economic impacts associated with the development. Instead, the CAPEX of the project is about R82.18 billion and will create numerous multiplier effects in the area. Further, approximately 118 498 construction-related and 19 838 operation-related jobs.
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-	A detailed impact assessment will be undertaken in the EIA Phase and will include an assessment of social and economic impacts as well as ecological impacts. Based on the type of proposed development, it is not expected

Question from the Need and Desirability Guideline	Response
economic impacts will result in ecological impacts (e.g. over utilization of natural resources, etc.)?	that the socio-economic impacts will result in non-mitigatable ecological impacts.
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Several alternatives in terms of site, layout and technology are being assessed as part of the Scoping and EIA Phase. A detailed assessment of the alternatives will be undertaken in the EIA Phase once specialist studies are completed and can contribute to the impact assessment. When assessing these alternatives, the following will be addressed: • The findings of the specialist studies; • The results of the impact assessment; and • The need for the project. This impact assessment will ensure that the Best practicable environmental option is selected.
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	A detailed Scoping and EIA process is currently being undertaken. This includes the assessment of alternatives, compilation of a detailed impact assessment and undertaking relevant specialist studies in accordance with all applicable legislations. Further, as noted above, the proposed development is in line with local and regional SDFs, Plans and Visions. It is believed that the alternatives being assessed does allow for the best practicable environmental option to be determined and the EAP will be able to make an informed decision.
What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	A number of specialist studies will be undertaken as part of the EIA Phase to ensure that the proposed development is sustainable and does not result any negative impacts to disadvantaged persons. A town planning application is also underway, adding to public and community engagement and involvement in assessing the impacts of the proposed development.
What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	In identifying the potential impacts associated with the development, the full lifecycle was assessed. A more detailed impact assessment which will incorporate the findings of the specialist studies will also be included in the EIA Report. Further, the site specific EMPr will include the roles and responsibilities related to construction and operational phases of the development and ensure that the

Question from the Need and Desirability Guideline	Response
	responsibility of the implementation of the EMPr falls to the applicant.
What measures were taken to: • ensure the participation of all interested and affected parties, • provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation • ensure participation by vulnerable and disadvantaged persons, • promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means, • ensure openness and transparency, and access to information in terms of the process, • ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and • ensure that the vital role of women and youth in environmental management and development were recognized and their full participation therein were promoted?	A detailed public participation process is being undertaken as part of the Scoping and EIA process. As part of this, a detailed Interested and Affected Party (I&AP) Database was compiled and included affected and adjacent landowners, organs of state such as the Emfuleni Local Municipality, DWS, SACAA, SAHRA and DFFE etc. In addition, the I&AP database included the affected ward councillor/s of the area. To date, these I&APs have been notified of the Scoping and EIA process and provided an opportunity to register their interest and attend the proposed public open day where information on the proposed upgrade was provided (together with a separate project). All registered I&APs will also be provided with an opportunity to comment on all reports (both the Scoping Report and EIA Report). Numerous communication methods (including site notices, adverts, hand delivery of BIDs, emails, public meetings and extensive consultation) are being employed, and it is felt that public participation will be such to ensure participation by all potentially interested or affected people.
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)	The proposed development is in line with several SDF's, including the Emfuleni SDF. In addition, through the construction phase of the development, local community members will be employed. There will also be several economic multiplier effects through the CAPEX investment of R82.18 billion. This will benefit people from all economic classes and allow for the upliftment and expansion of the local area.
What measures have been taken to ensure that current and / or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	A site specific EMPr will be compiled in the EIA Phase and will include an Environmental Awareness Plan. As part of this, workers will be informed of their rights to refuse work that might be harmful to human health or the environment. Applicable legislation, such as the OHSA, will also be enforced.

Question from the Need and Desirability Guideline	Response
Describe how the development will impact on job creation in terms of, amongst other aspects: • the number of temporary versus permanent jobs that will be created, • whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area), • the distance from where labourers will have to travel, • the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits); and • the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.)	The following can be noted in regard to this: • The EMPr that will be compiled will note that local employment should be encouraged to promote skills transfer and development. This will uplift the immediate area and provide job opportunities to potential job seekers and manage it in the best suitable way. • A small number of job-losses might be experienced, due to the loss of agricultural activities on the affected farm portions. Measured against the gain of job opportunities during the construction phase (of the 118 498 jobs anticipated to be created during the construction phase, ± 20% there of (±23 700 jobs), is anticipated to employ low- and unskilled employees), as well as new opportunities created as part of the Agri-Zone development, the overall impact of the project is considered to be positive.
What measures were taken to ensure: • That there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and • That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	National Legislation i.e. NEMA, NWA, NHRA, NEM:BA etc., were consulted in the preparation of this Scoping Report. Provincial guidelines and government input also formed part of the literature review. Spatial development tools also aided the EAP to assess and provide information pertaining to the proposed development. Any comments received from I&APs or organs of state are included in the comments and response register.
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	The site specific EMPr which will be compiled will include realistic and achievable mitigation measures which aim to reduce any negative impacts as well as to enhance any positive benefits associated with the project. As the project development will span 60-years, applicable authorisations (e.g., EA & WULA) will be applied for and/or updated at each required step in accordance with relevant, at-the-time-of-construction legislations.
What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	The site specific EMPr which will be compiled will include detailed roles and responsibilities. In addition, a penalty system for contractors will be included. All requirements, as stated in approved licenses/ authorisations, will be adhered to and enforced.

Question from the Need and Desirability Guideline	Response
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Several alternatives in terms of site, layout, and technology are being assessed as part of the Scoping and EIA Phase. A detailed impact assessment of each alternative will be undertaken in the EIA Phase once specialist studies are completed and can contribute to the impact assessment. When assessing these alternatives, the following will be addressed: • The findings of the specialist studies; • The results of the impact assessment; and • The need for the project. This impact assessment, with input gained through the Public Participation Process, will ensure that the best practicable environmental option is selected.

6. PROCESS FOLLOWED TO REACH THE PREFERRED ACTIVITY, SITE AND LOCATION

Section 2(1)(g) of Appendix 2 of the EIA Regulations, 2014 (as amended) note that the Scoping Report needs to include a full description of the process followed to reach the preferred activity, site and location of the development footprint within the site, including –

- Details of the Alternatives considered
- Details of the public participation process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs
- A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them
- The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects
- The impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources; and can be avoided, managed or mitigated.
- The methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives
- The positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects
- The possible mitigation measures that could be applied and level of residual risk.
- Outcome of the site selection matrix
- If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such
- Concluding statement indicating the preferred alternatives, including preferred location of the activity

6.1 NATURE OF THE ACTIVITIES

The proposed Vaal Aerotropolis development comprises the integrated development of an airport-oriented urban and economic precinct within the Vaal region. The development is envisaged to include aviation-related infrastructure and services, commercial and industrial activities, logistics and warehousing facilities, mixed-use and supporting hotel development, as well as associated municipal and transport infrastructure within the boundaries of the current application.

The development would require the construction of internal roads and upgrading of some access roads, stormwater systems, water, a wastewater treatment facility and sanitation infrastructure, electricity supply, telecommunications and other bulk services, together with associated earthworks, site preparation and landscaping. The Aerotropolis is intended to facilitate economic development, improved regional connectivity, logistics and investment in the Emfuleni area, while creating a coordinated urban framework around the aviation and related economic activities. The proposed Vaal Aerotropolis is in line and included in the Emfuleni SDF, 2024.

Although the development of the Vaal Aerotropolis will result in the transformation and loss of portions of existing agricultural land, this impact is partially mitigated through the incorporation of an extensive, dedicated Agri-Zone within the overall development framework. The Agri-Zone is intended to retain and promote agricultural production as an integral component of the Aerotropolis and will accommodate a range of focused agricultural activities, including livestock production, hydroponic farming, greenhouse cultivation and other intensive and specialised agricultural enterprises.

The inclusion of the Agri-Zone therefore provides for the continued utilisation of land for agricultural purposes within the broader development area, while supporting more intensive, diversified and potentially higher-value agricultural production. This approach seeks to offset, to a degree, the loss of conventional agricultural land associated with the development and to ensure that agriculture remains an important component of the future land-use structure of the Aerotropolis.

For purposes of the Scoping Report, the activities can broadly be described as the phased establishment of an integrated aviation, logistics, commercial, industrial and mixed-use development, together with the infrastructure required to support these land uses.

6.2 ALTERNATIVES

According to the 2014 EIA Regulations, alternatives are defined as:

"Different means of meeting the general purpose and requirements of the activity, which may include alternatives to the-

(a) property on which or location where the activity is proposed to be undertaken;
(b) type of activity to be undertaken;
(c) design or layout of the activity;
(d) technology to be used in the activity; or
(e) operational aspects of the activity;
and includes the option of not implementing the activity"

As part of the development planning process for the proposed development, several technical assessments have been undertaken including the following: (i) Outline Scheme Report, (ii) Stormwater Management Plan, (iii) Traffic Impact Assessment, (iv) Geotechnical Investigation Report, (v) Flood Lines Delineation

Report, and (vi) Electrical Service Provision. Discussions with the technical team as well as all involved specialists were then undertaken to determine the requirements of the development and to ensure that the concept of sustainability was considered.

On the basis of these investigations and discussions, and in line with the requirements of the Regulations, this Scoping and EIA process assesses and discusses the following development alternatives:

- Proposal
- Alternative 1
- The No-Go Option.

6.2.1 PROPOSAL

The proposal (preferred option) refers specifically to Phase 1 (this application) and is anticipated to conclude in 2047, prior to the commencement of Phase 2. The proposal takes into account the requirements and/or recommendations of various specialists including, but not limited to, engineers, town planners, architects, and various environmental specialists. The aim is to develop the aerotropolis in such a manner that the full potential of the site is achieved; to that end, the following aspects were investigated.

6.2.1.1 SITE

The proposed aerotropolis is earmarked to be developed in the west of Gauteng within the Emfuleni (Phase 1) and Rand West (Phase 2 & 3) Local Municipalities. A total of 13 farm portions has been earmarked for the proposed Phase 1 of the Vaal Aerotropolis development, thereby making up the application area (**Table 1-5**, **Table 1-6** and **Figure 1-6**).

Within the Vaal Aerotropolis perimeter, a township will be established with the zonings and land uses as shown in **Figure 6-1** below, while all remaining areas - outside the township application - will retain their Agricultural Zoning. These areas are earmarked for expansion of the Aerotropolis and are not included in the current application.

LAND USE TABLE

ZONING	PROPOSED LAND USE	ERF NUMBERS	No. OF STANDS	AREA OF STANDS& STREETS	% OF AREA
AERODROME	AERODROME, BUILDINGS NECESSARY FOR AND IN CONNECTION WITH AN AERODROME, COMMERCIAL USES, BUSINESS PURPOSES, SHOPS, PLACES OF REFRESHMENT, LIGHT INDUSTRIES, FILLING STATIONS, CONFERENCE FACILITIES, GOVERNMENT AND MUNICIPAL PURPOSES, PARKING AREA / PARKING GARAGE, SPECIAL BUILDINGS, LAND USES SUBSERVIENT AND RELATED TO THE USES AND ANCILLARY USES WITH CONSENT	1-5,7-10	9	1954,0481ha	55,12
PUBLIC SERVICES AND UTILITIES	COMMUNICATION FACILITIES, POWER STATION / SUB-STATION, RESERVOIR AND BUILDINGS IN CONNECTION THEREWITH, SEWERAGE AND WATER TREATMENT WORKS AND ANCILLARY USES WITH CONSENT	16	1	40,3296ha	1,14
BUSINESS 1	BUSINESS PURPOSES, OFFICES, DWELLING UNITS, HOTELS, SHOPS, CONFERENCE FACILITIES,INSTITUTIONS, PLACES OF INSTRUCTION, PLACES OF PUBLIC WORSHIP, PARKING AREA / PARKING GARAGE, PLACES OF REFRESHMENT, PARKING AREA / PUBLIC GARAGE, RESIDENTIAL BUILDINGS, SHOPS, SOCIAL HALLS, SPORT AND RECREATION USES AND FILLING STATIONS AND ANCILLARY USES WITH CONSENT	6	1	33,3164ha	0,94
AGRICULTURAL	AGRICULTURAL BUILDINGS, AGRICULTURAL LAND, DWELLING HOUSES, SECOND DWELLING HOUSE AND OUT-BUILDINGS IN CONNECTION THEREWITH, STAFF ACCOMMODATION, AGRICULTURAL INDUSTRY, WAREHOUSES, LABORATORIES AND USES ANCILLARY TO AGRICULTURAL PRODUCTION WITH CONSENT	11-14,17,19-21, 23,26-28	12	1184,5442ha	33,41
PRIVATE OPEN SPACE	AS PER SCHEME INCLUDING GARDENS, PARKS, PUBLIC OPEN SPACE, PUBLIC SPORT AND RECREATION GROUNDS AND BUILDINGS USED IN CONNECTION THEREWITH. CONSERVATION AREA	15,18,22,24,25	5	160,1874ha	4,52
EXISTING AND PROPOSED ROADS	PRIVATE ROAD	29	1	33,9086 ha	0,96
	STREETS			138,5721ha	3,91
TOTAL			29	3544,9064ha	100%

FIGURE 6-1: VAAL AEROTROPOLIS TOWNSHIP ESTABLISHMENT – LAND USE TABLE

6.2.1.2 LAYOUT

Each infrastructure aspect related to the different components of the proposed Aerotropolis – Airport Precinct, Airport City, Agri-Zone, Trade Zone and Additional Infrastructure – have been aligned / arranged in such a manner so as to be most effective, cost-saving and sustainable, as per specialist recommendations (**Figure 4-5**, **Figure 4-6, Figure 4-7** and **Figure 6-2**).

The first runway will be constructed in a north-south alignment so as to favour the predominant wind direction and minimize impacts on the avi-fauna community associated with the wetland system identified to the north-north-east of the Vaal Aerotropolis study area. The Trade Zone will be situated adjacent to the first runway (in future, between the two runways which will be approximately 2 000m apart) with the terminals and additional facilities strategically placed for optimal access and functionality. Airport City will be situated in the southeast of the proposed township and will, depending on the phase, contain sub-areas wherein the hotel, office parks, boulevard, shopping centre, etc. will be built.

6.2.1.3 DESIGN / ENGINEERING

The water and sewer reticulation systems (**Figure 4-5** and **Figure 4-7**) will be primarily gravity-based with minimal pump-usage. Treatment for both water and sewer will be done on site via custom built WTW and WWTW; refer to Section 4.1.3.1 for more information in this regard. The aim of the aerotropolis is to, at least for Phase 1, be self-sustainable in terms of water supply, effluent treatment, and eventual discharge.

The Split Diamond Interchange (SDI) at the N1/P24(R54)/D2459 has been selected as the preferred road interchange / access method (Sections 4.1.6.2). This method takes into account not only topography and existing infrastructure but also obtained permissions from the applicable authorities (e.g., SANRAL, GDRT). This option also determined how interchange-related stormwater infrastructure will be implemented (Section 4.1.3.2).

Stormwater management structures will be capable of handling a 1:50-year flood event by consisting of major and minor stormwater routes as well as a dry detention basin (attenuation dam) that will be interlinked to form the bulk stormwater services (Section 4.1.3.3). Chambers, catchpits, riprap, gabions, filters, fat traps, and other energy-dissipating / contamination prevention solutions will be implemented at strategic locations to ensure sustainability and long-term operation.

Electricity demands, for Phase 1, will be met via connections to existing ESKOM infrastructure (Section 4.1.3.4). Allocated areas for future solar plant facilities will be prepared for future implementation.

The Emfuleni Local Municipality has provided confirmation that it will provide solid waste removal services for the proposed Vaal Aerotropolis (Appendix F). Solid waste will be stored within municipal provided bulk refuse bins (i.e., skips) in a dedicated zone prior to municipal removal. Applicable by-laws as well as

relevant norms and standards will be adhered to as stated in the IWMP. Conditions associated with the collection and disposal of solid waste will be subject to Emfuleni Local Municipality's requirements,

Figure 6-2 provides an overview of the Proposal Layout for the proposed Vaal Aerotropolis (Phase 1) (**Appendix B1**).

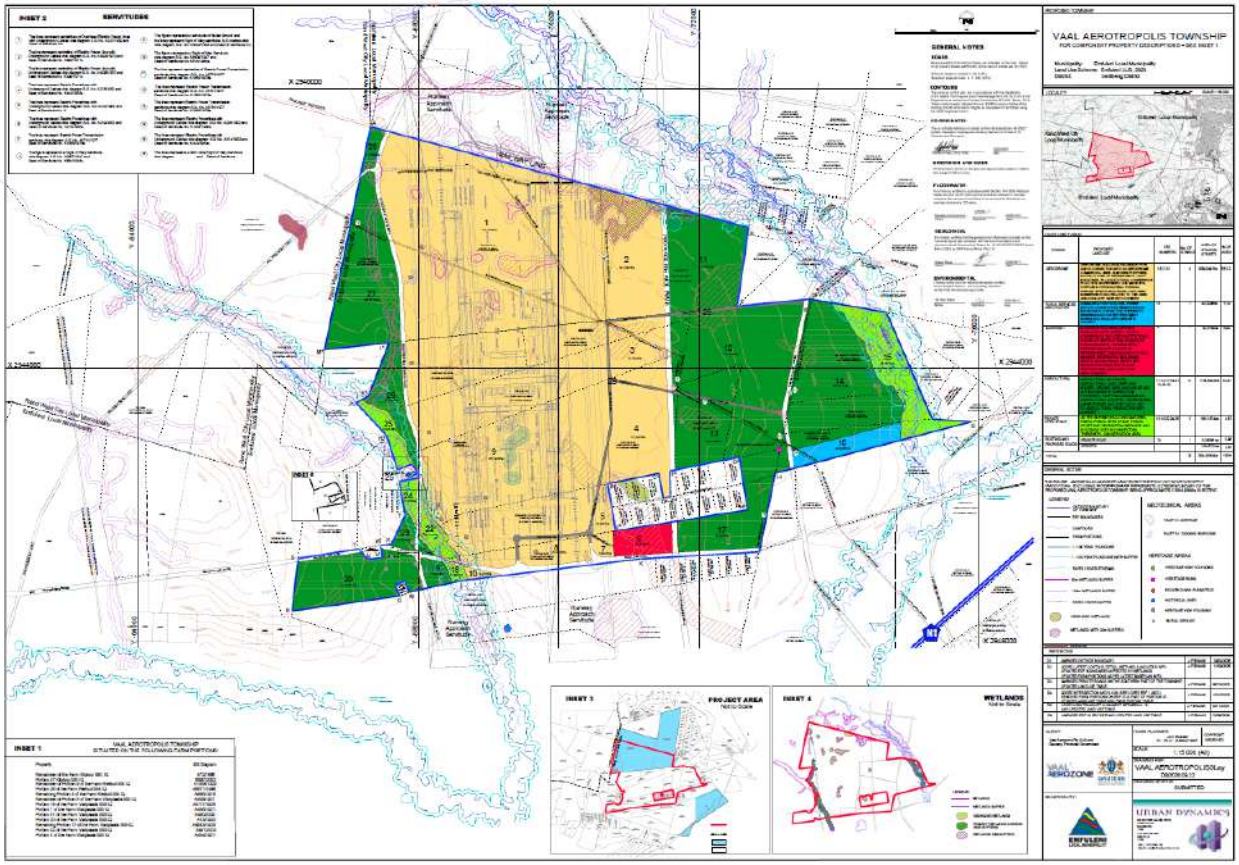


FIGURE 6-2: PROPOSAL LAYOUT PLAN

6.2.2 ALTERNATIVE 1 (NOT PREFERRED)

Alternative 1 refers to options / alternatives that were originally considered as part of the proposed Vaal Aerotropolis but have ultimately been deemed **not preferred** due to various reasons. These are discussed below, with A3 maps available under **Appendix B2 – B4**.

6.2.2.1 SITE

The location of Alternative 1 is the same as for the Proposal with the proposed aerotropolis earmarked to be developed on the western side of the Gauteng Province within the Emfuleni and Rand West City Local Municipalities. The original perimeter, however, was intended to be comprised of more than 20 properties and a total area close to 6000 ha (**Figure 6-3**). However, following purchases, lease agreements and final acquisitions, some properties were removed from the original perimeter span.

6.2.2.2 LAYOUT

The original orientation of the runways was in a north-north-east direction, with a proposed, narrower distance between the two runways of 1 500 m, and the layout of the terminals in an ox-bow form (**Figure 6-3** and **Appendix B2**). With this alternative, the orientation of the runway would have been directly in line with the dam / wetland system to the north of the study area. This will not only have a greater negative impact on aquatic avi-fauna but will also increase the risks associated with bird strikes. In addition, the orientation is also not in line with the predominant wind direction for the area, no adverse impact is expected herewith, however, the orientation is still not ideal.

With reference to the width between the runways, a narrower separation (1 500m) will decrease the storage size of the trade zone by approximately 30% to that of the Proposal Layout. The layout of the passenger terminals in an ox-bow form also proved problematic for the phasing of the development.

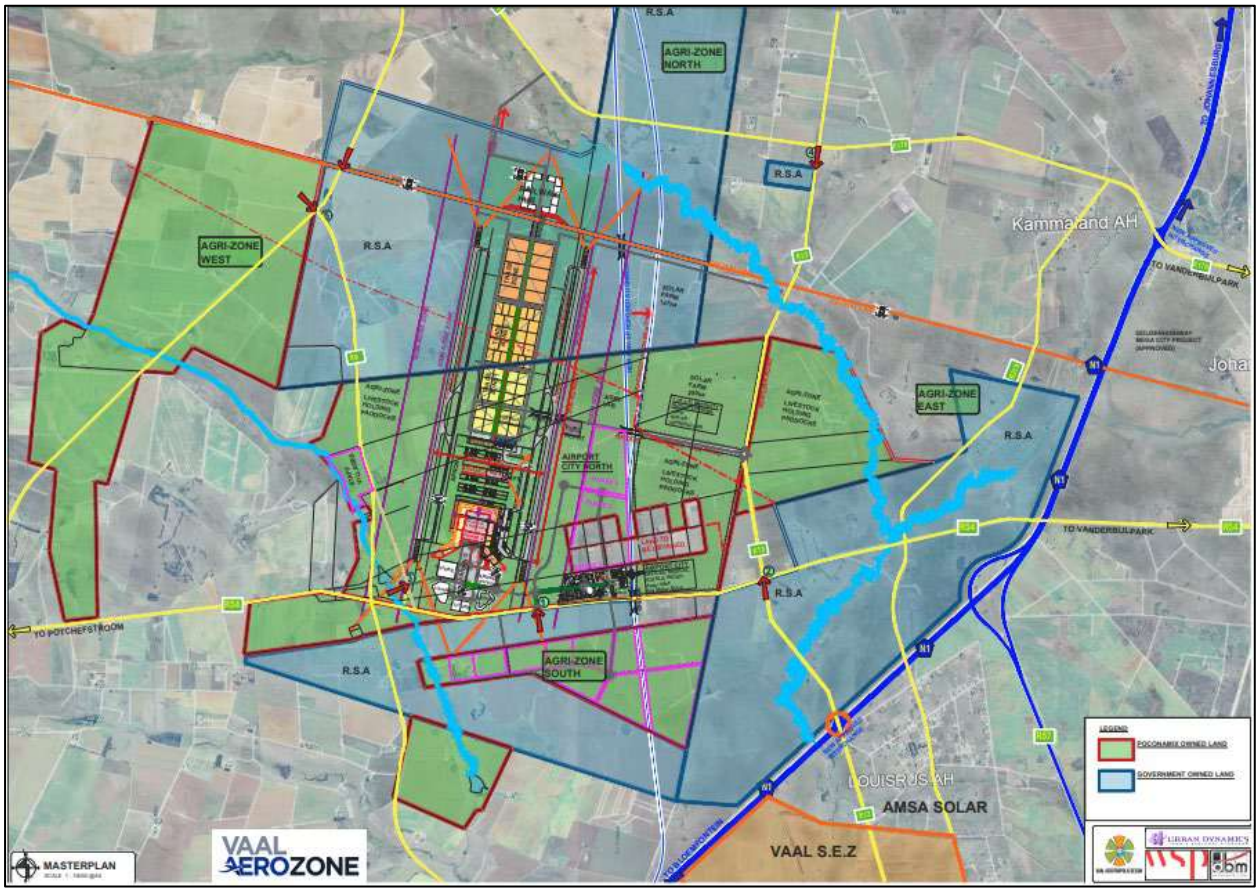


FIGURE 6-3: ALTERNATIVE 1 – ORIGINAL ORIENTATION

6.2.2.3 DESIGN / ENGINEERING

In terms of sewerage, further investigation determined that the three existing WWTW (Leeuwkuil, Rietspruit, and Sebokeng) were already at or exceeding capacity and in need of upgrade. In addition, several sections of pipes and associated pump stations were either not operational or in dire need of replacement. Overall,

Emfuleni Local Municipality's infrastructure was deemed to have reached the end of its lifespan and presented too great a risk of sewer spills for Vaal Aerotropolis. Hence, this alternative (i.e., connect to existing municipal infrastructure) was discarded as part of the Phase 1 development in favour of on-site WTW and WWTW. It is, however, suggested that a bulk sewer pipeline be connected between the Vaal Aerotropolis and the regional Rietspruit WWTW as part of the Phase 2 development.

In terms of roads, several N1 interchange options were rejected by SANRAL for various reasons related to interchange spacing, minimal relocation possibilities, sub-standard vehicle weaving distances, problematic restrictions, and inability to promote a balanced road network. The rejected roads were not assessed, and are listed below:

- N1/K13 interchange and K13 link to the K178
- N1/PWV20/PWV5 interchange and PWV5 link to the PWV5/K178 interchange
- N1 and K178 access interchange

It is to be noted that a narrow diamond interchange with a partial cloverleaf off-ramp for southbound vehicles from the N1, and the potential for a future loop to serve westbound vehicles on the K170 to access the N1 northbound (**Figure 6-4** and **Appendix B3**) was approved in principle by SANRAL, however, deemed not-preferred in terms of access points.

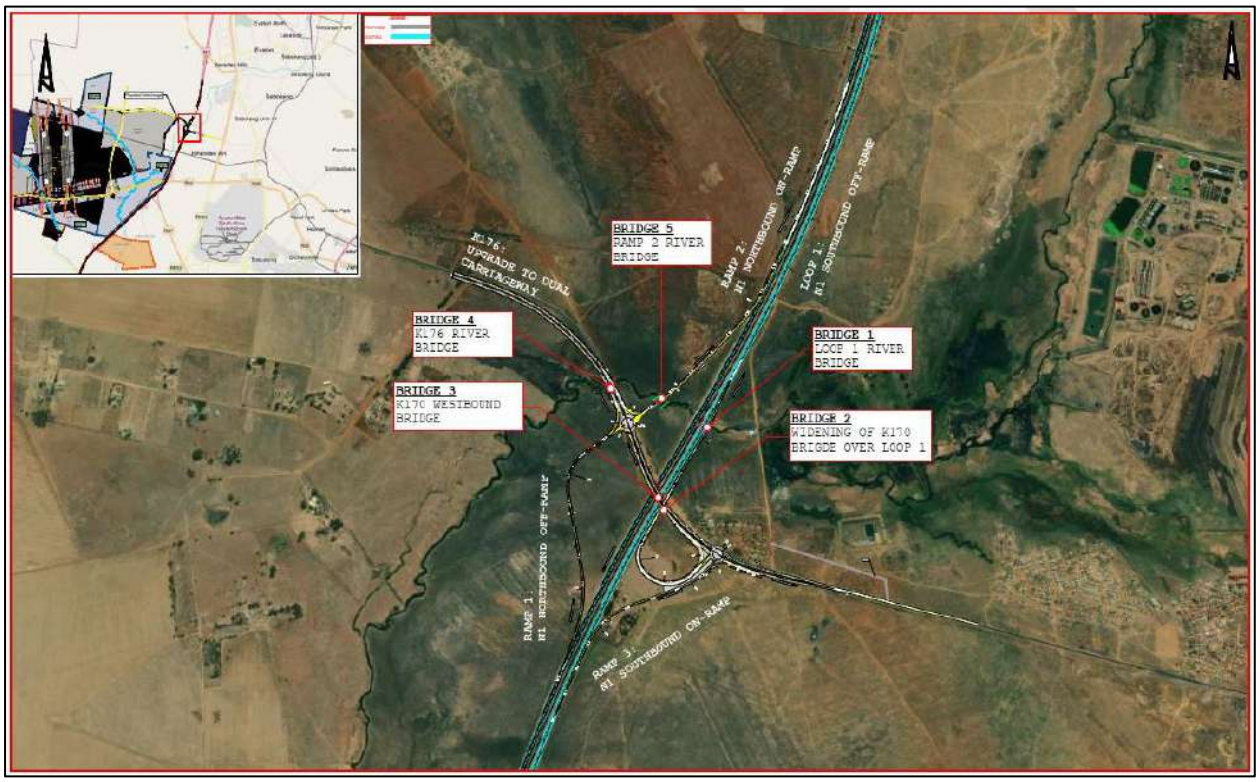


FIGURE 6-4: ALTERNATIVE 1 – NARROW DIAMOND INTERCHANGE

In respect of stormwater, the original plan involved three discharge zones, each with their own discharge point, as well as an attenuation structure located towards the north of the site, in close proximity to the eastern runway (**Figure 6-5** and **Appendix B4**). However, following further assessments in terms of avi-faunal / airplane risk, water quality implications, general layout, and cost implications it was decided to move the attenuation structure to the east of the site, and adjust the associated stormwater infrastructure accordingly.

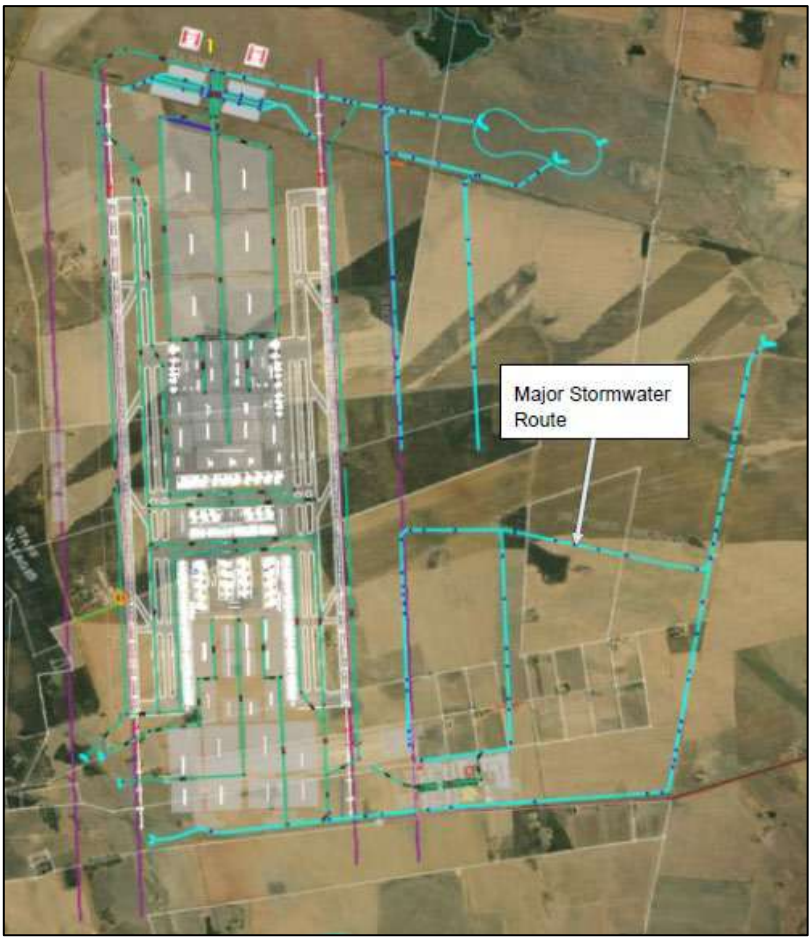


FIGURE 6-5: ALTERNATIVE 1 – AEROTROPOLIS PRECINCT ORIGINAL STORMWATER LAYOUT MAP

Stormwater designs were also developed for the narrow diamond interchange (not preferred) as discussed above. The aim of these stormwater systems was to integrate with the existing drainage systems. The proposed road drainage would have consisted of new channels and culverts; while the existing drainage would have been reinstated and tied into the new drainage infrastructure to create a complete drainage system for the upgraded interchange (**Figure 6-6** and **Appendix B5**).

FIGURE 6-6: ALTERNATIVE 1 – NARROW DIAMOND INTERCHANGE STORMWATER LAYOUT MAP

6.2.3 NO-GO ALTERNATIVE

As standard practice and to satisfy regulatory requirements, the option of not proceeding with the project is included in the evaluation of the alternatives. The main result of the No-Go Option is that the environment with its existing agricultural activities will remain the status-quo and limited new / additional impacts will occur. No infrastructure (roads, stormwater, water and sewer reticulation, etc.) will be developed / implemented, and the area will remain relatively undisturbed.

However, the No-Go Option will also result in significant losses in terms of socio-economic potential. The anticipated ± R82.18 billion investment which includes ± 118 498 construction-related and ± 19 838 operation-related employment opportunities will be lost. The aims of the Sedibeng as well as the Emfuleni Spatial Development Frameworks will not be met and a number of additional positive economic multiplier effects, which could be generated through the capital investment, would also be lost.

The No-Go Option is not preferred as the resulting economic losses can be seen as a significant negative impact on the overall South African economy (both nationally and internationally).

6.3 ENVIRONMENTAL ATTRIBUTES AND SENSITIVITY MAP

Due to the development footprint being the same property for both the proposal and alternative, environmental sensitivities as described in **Section 3,** are triggered by both options. A preliminary assessment was undertaken using the C-Plan v4, rivers, wetlands and vegetation data sources to prepare a preliminary sensitivity Map, as is indicated in **Figure 6-7**. These environmental attributes have been considered in the scoping phase to ascertain areas where further investigation is required. The following is a summary of the sensitive features on site:

- Freshwater resources: various wetlands and the Leeuspruit and Klein Rietspruit streams are present on the proposed study area. A Wetland Assessment and Aquatic Impact Assessment will be undertaken to determine the impact of the proposed development on aquatic and wetland resources. A Hydropedological assessment will also be undertaken.
- Ecological sensitive areas including CBA: Irreplaceable Areas and Ecological Support Areas form part of the site; a Floral Impact Assessment and Terrestrial Biodiversity Assessment will be conducted.
- Sensitive faunal species have been identified by the Screening tool and confirmed with the site verification assessment. A Fauna Impact Assessment, Avi-Faunal Assessment and Terrestrial Biodiversity Impact Assessment will be conducted and included in the EIA Report.
- Agricultural sensitivity of the area is very high due to the high agricultural potential of the study area. An Agricultural Impact Assessment will be conducted.
- Heritage and Cultural resources have been identified during the site visit and therefore a HIA & Paleontological Assessments will be conducted; and
- Vegetation Map – The site forms part of the Soweto Highveld Grassland, which is classified as endangered. A site verification assessment has been undertaken and shows that the site is disturbed and transformed in parts. A Floral Impact Assessment and Terrestrial Biodiversity Assessment will however be conducted.

It should be noted than an updated sensitivity map will be compiled once the various specialist studies have been completed in the EIA Phase.

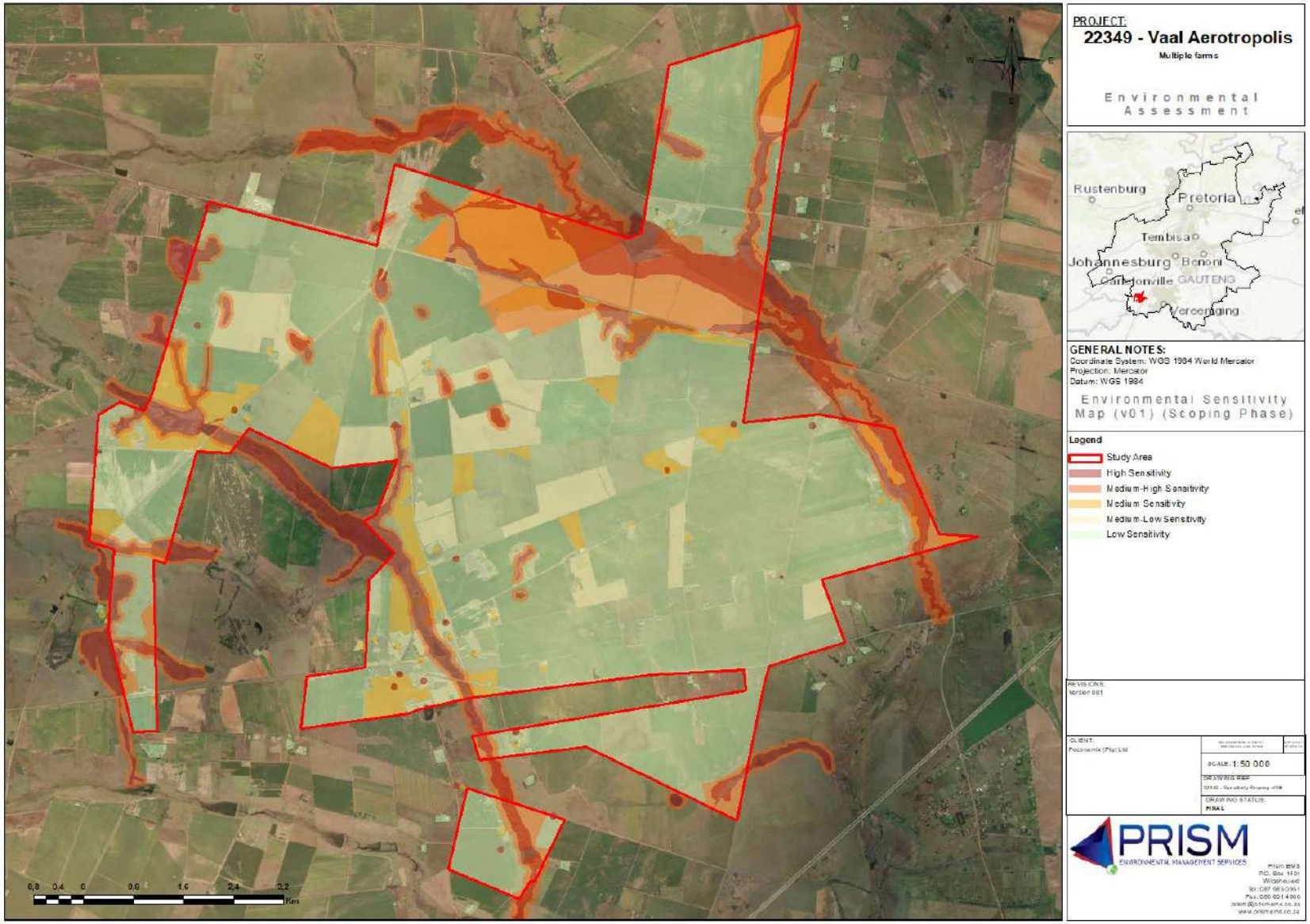


FIGURE 6-7: PRELIMINARY ENVIRONMENTAL SENSITIVITY

7. PUBLIC PARTICIPATION PROCESS

7.1 OBJECTIVE AND PURPOSE OF PUBLIC PARTICIPATION

The purpose of the public participation process is to provide information regarding the proposed project to any potentially Interested and/or Affected Parties (I&APs) for use and consideration throughout the environmental assessment process. The information usually involves a combination of the technical project scope, environmental attributes and sensitives, cultural and heritage aspects as well as socio-economic factors that may be potentially beneficial or problematic to various role players.

The dissemination of such information is intended to assist the public in understanding how the proposed project and/or development may impact them and the environment in either a positive and/or negative manner, and especially where impacts are determined or perceived as significantly high, how such impacts may be influenced by project changes (layout or design aspects) or management measures may be implemented to reduce or minimise the significance of any identified impacts.

As a registered I&AP, members of the public of any affiliation are awarded the opportunity to remain informed of the steps, actions and decisions made within the environmental impact assessment process and are able to actively participate by reviewing all information provided by the EAP to the I&AP's in a reasonable period in order to provide comments, objections, suggestions or any other information that will assist the project to develop in a favourable for all manner or contribute to the competent authority's knowledge in order to make an informed decision on the application for environmental authorisation.

7.2 PROTECTION OF PERSONAL INFORMATION ACT, 2013

The Protection of Personal Information (POPI) Act (Act No. 4 of 2013) aims to promote the protection to personal information processed by public and private bodies. Section 14 of the Constitution of the Republic of South Africa, 1996, provides that everyone has the right to privacy, this includes the right to protection of personal information.

This Public Participation Process is being carried out in line with the POPI Act. All Personal information with regards to I&APs will be recorded on a project specific I&AP database. Registered I&APs will be given the opportunity to provide consent for their details to be used or to remain anonymous. Regardless, all personal information collected on the database as well as personal information contained in any correspondence between Prism EMS Africa and I&APs, will be blanked out for public review as well as review by the Authorities. Each I&AP will be provided with a pseudonym (I&AP 01, I&AP 02, etc.,).

Personal Information collected by Prism EMS Africa will not be made available to the public or Authorities unless consent is given by registered I&APs.

7.3 NOTIFICATION PHASE OF PUBLIC PARTICIPATION

The public participation process commenced with identifying and notifying all I&AP's. Background information documents (i.e. written notifications) including comment forms were provided as a basic source of information, site notices were placed at strategic locations, newspaper adverts were circulated, and emails were sent out. Here with, potential I&APs are invited to register as I&AP's throughout the Scoping and Environmental Impact Reporting phases of the project.

7.3.1 IDENTIFIED INTERESTED AND AFFECTED PARTIES

Extensive stakeholder notification and consultation was undertaken, resulting in the identification of a broad and diverse network of potential Interested and Affected Parties (I&APs). The stakeholder engagement process yielded a comprehensive I&AP database comprising several hundred identified and formally notified stakeholders, including government authorities, neighbouring landowners, community representatives, non-governmental organisations, and other relevant interest groups. This extensive stakeholder database has facilitated inclusive participation and ensured that potentially affected parties were afforded a reasonable opportunity to engage in the environmental assessment process.

Refer to **Appendix D4** for a detailed list of the interested and/or affected members of the public that were notified and/or subsequently registered as I&APs (redacted as required i.t.o. the POPI Act, 2013).

7.3.2 NEWSPAPER NOTICE

Legal Notices were published in the Vaalster, Westrand Advertiser and Sedibeng Star Newspapers on 29 September and 1 October 2026. The advert includes the dates associated with the registration period as well as review periods for the Scoping Report and WULA Summary Report.

Refer to **Appendix D1** for examples of the newspaper notice – proof to follow for final submission of the Scoping Report.

7.3.3 SITE NOTICE

Several site notices, showing a map of the proposed development and associated components, were placed on and around the site on 28 September 2026. The site notices also include the dates associated with the registration period as well as review periods for the Scoping Report and WULA Summary Report. Refer to **Appendix D2** for examples of the site notices – proof to follow.

7.3.4 WRITTEN NOTIFICATIONS

The surrounding landowners and/or occupiers as well as organs of state (listed in **Appendix D4**) are being notified in writing via WhatsApp and e-mails on **30 September 2026** and were issued with a copy of the BID to provide further information on the project. A copy of the BID is provided in **D3.**

Refer to **D4** for proof of the Written Notifications undertaken as part of the initial notification *(to follow)*.

7.3.5 COMMENTS RAISED BY I&AP'S DURING THE INITIAL NOTIFICATION PERIOD

The comments received during the PPP period (01 October 2026 – 2 December 2026) will be summarised in the Comments and Responses Report. All comments received from I&AP's will be addressed in detail during the EIA phase of the S&EIR process.

7.4 SCOPING PHASE AND WULA SUMMARY REPORT COMMENT PERIOD

The Scoping Report (this document) as well as the WULA Summary Report will be made available for review by registered I&APs and Organs of State/Authorities.

Email notification will be sent out to all registered I&APs on 30 September 2026 to notify them of the review of the Scoping Report and WULA Summary Report. As part of this, a link to access the online version of the report, on the website www.prismems.co.za will be provided. Proof of notification will be included in the Scoping Report which is to be submitted to GDEnv after the public review period.

Online uploads, hard copies and/or electronic copies (e.g., USBs) will be submitted to relevant Competent and/or Commenting authorities including, but not limited to:

- GDEnv;
- DWS;
- SACAA;
- SANRAL;
- GDRT;
- National Department of Agriculture (NDA);
- Gauteng Department: Agriculture and Rural Development;
- ATNS;
- DOT;
- NDOT;
- Emfuleni Local Municipality;
- Rand West City Local Municipality;
- Sedibeng District Municipality;
- West Rand District Municipality;
- PHRA-G;
- GPDRT; and
- SAHRA.

Proof of delivery will be included in both the Scoping Report to GDEnv and the WULA Phase 3 submission to DWS after the public review period.

7.5 IMPACT ASSESSMENT PHASE COMMENT PERIOD

Upon acceptance of the Scoping Report by the GDEnv, the applicant / EAP will continue with the tasks contained in the plan of study (**Section 8** of this report). Subsequently an EIA report will be compiled and made available to all registered I&APs and relevant organs of state for a period of 30 days.

7.6 FINAL REPORTS AND DEPARTMENTAL DECISIONS

All comments received during the comment period discussed above will be considered and incorporated into the Final EIA Report and documented in the Comments and Response Report. Thereafter, the Final EIA Report will be submitted to GDEnv for decision.

Likewise, the WULA Summary Report, updated Comments and Response Report, as well as any other identified technical / specialist documents will be uploaded to DWS's online platform for formal assessment and decision making.

7.7 OUTCOME OF THE DECISION

Registered I&AP's will be notified in writing of the outcome of the Department's decision within 12 days of the decision. The notification will include details of the process and timeframes in which to appeal the outcome of the decision made by the competent authority, GDEnv.

8. PLAN OF STUDY FOR THE EIA PHASE

The requirements that form part of the plan of study for undertaking the EIA phase includes the following:

- A description of the alternatives to be considered and assessed within the preferred site (**Section 6.2**), including the option of not proceeding with the activity (**Section 6.2.3**);
- A description of the aspects to be assessed as part of the environmental impact assessment process (**Table 8-1**);
- Aspects to be assessed by specialists (Table 8-1 and Section 8.2).
- A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists (**Section 8.3**);
- A description of the proposed method of assessing duration and significance (**Section 8.3**); an indication of the stages at which the competent authority will be consulted (**Section 1.1**);
- Particulars of the public participation process that will be conducted during the environmental impact assessment process (Section 1.2.2; Section 7; Section 8.5; Table 8-10);
- A description of the tasks that will be undertaken as part of the environmental impact assessment process (**Section 8.5**); and
- Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored (**Section 8.4**).

The sections that follow aim to determine potential environmental issues that will be further considered during the EIA Phase. The issues raised by I&APs during the Scoping Phase will also guide the identification of significant issues.

8.1 PREDICTING SIGNIFICANT ENVIRONMENTAL ISSUES

In line with the requirements of the Scoping Process in terms of the EIA Regulations, 2014 (as amended) this section aims to identify potentially significant environmental issues for further consideration and prioritisation during the EIA stage. This focusses on the EIA Phase and ensures that potential impacts related to the proposed development are determined through specialist studies, where necessary.

Potential impacts associated with the proposed development were determined by assessing the following:

- Project-related components and infrastructure (Section 4.1);
- Activities associated with the project life-cycle (i.e. pre-construction, construction, operation and decommissioning) (**Section 4.3**);
- Proposed alternatives (Section 6.2);
- Nature and profile of the receiving environment and potential sensitive environmental features and attributes (**Section 3**), which included a desktop evaluation (via literature review, GIS, topographical maps and aerial photography) and site investigations;

- Issues raised by I&APs (to follow); and
- Legal and policy context (Section 2).

8.1.1 SUMMARY OF ENVIRONMENTAL ISSUES

Pertinent environmental issues linked to the assessment of the receiving environment are briefly discussed in **Table 8-1** below; these may increase as the project proceeds. Information on how the impact will be assessed during the EIA phase and/or mitigated is also provided.

TABLE 8-1: POTENTIAL ISSUES TO BE ASSESSED DURING THE EIA PHASE

Environmental Aspect	Potential Issues / Impacts – Construction	Potential Issues / Impacts – Operation	Studies Required
Local Climate	• No adverse impacts are envisioned.	• Airports and ancillary uses contribute to atmospheric emissions	• Climate Change Impact Assessment • Air Quality Impact Assessment.
Topography	• Alteration of natural slopes; increased erosion risk during earthworks	• Stabilised embankments but potential stormwater runoff	• Geotechnical Investigation Report • Stormwater Management Plan
Geology and Soils	• Soil disturbance; compaction; contamination from fuel/oil spills	• Potential loss of topsoil; potential topography alteration.	• Geotechnical Investigation Report • Hydropedology Study
Land Use and Visual Impact	• Loss of agricultural land; disruption of existing farming. Permanent visual intrusion from infrastructure as well as construction and operational aspects. • Permanent changes in land use (agricultural to Aerotropolis).	• Increase in property values due to new developments (**positive**). • Permanent conversion to transport sector; reduced agricultural productivity. Permanent change in landscape character; increased lighting at night. • Increase noise impact due to take-off and landing of aeroplanes. • Possible negative and positive visual impacts related to the new buildings and developed areas.	• Detailed EMPr, • Visual Impact Assessment & • Noise Impact Assessment • Agricultural Assessment
Access Roads	• Increased traffic on local roads; • Congestion;	• New roads will be constructed during the project.	Traffic Impact Assessment

Environmental Aspect	Potential Issues / Impacts – Construction	Potential Issues / Impacts – Operation	Studies Required
	• Safety risks; • Effect on adjacent properties	• Increased traffic due to larger population in the area. • Improved connectivity.	
Agricultural Potential	• Loss of existing farming areas. • Soil disturbance and compaction.	• According to the GAPA IV map the area has a moderate to high agricultural potential. Thus, impacts are expected to the agricultural potential of the area. The proposed development is however in line with the Emfuleni SDF. The Agri-Zones shall be focused on production of agricultural products amenable for transport by air and the same transported to the rest of the world via the cargo terminal. This high-tech Agri-cluster is expected to be the largest climate-controlled growing area on the continent. An integrated perishable supply chain. A state-of-the-art tissue culture facility. The first live animal holding area for transport by air in South Africa. The Agri-Parks program, creating up to 300,000 small-scale producers and 145,000 new jobs in the next five years.	• Agricultural Assessment
Socio-Economic Environment	• Increased employment opportunities (**positive**) • Indirect injection of cash in the community due to investment (**positive**) • Potential issues regarding security in the area due to construction workers in the area	• Increased employment opportunities (**positive**) • Indirect injection of cash in the community due to investment (**positive**)	• Socio-Economic and Fiscal Impact Assessment • Public Participation Process

Environmental Aspect	Potential Issues / Impacts – Construction	Potential Issues / Impacts – Operation	Studies Required
Noise	• Increased noise pollution due to construction activities,	• Increased noise due to use of the area	• Noise Assessment
Air Quality	• Dust during construction	• Increased exhaust emissions due to use of the area	• Air Quality Impact Assessment • Climate Change Impact Assessment
Biodiversity	• Loss of vegetation; • Loss of potential CBA and Threatened Ecosystem area; • Impacts to sensitive features which provide habitat for a number of species • Disturbance of natural ecosystems, making them vulnerable to invasion of alien species • Negative impact due to dust	• Disturbance of birds and fauna in the area	• Biodiversity Assessment • Faunal and Floral Impact Assessments
Surface Water	• Impacts to flow, water quality, geomorphology and riparian habitat during construction within the river system. • Increased stormwater resulting in erosion of bed and banks of riparian habitat. • Decreased water quality resulting in contamination by construction vehicles • Increased siltation of river as a result of poor soil management	• Increased and poor management of stormwater • Decreased water quality resulting in contamination by vehicles	• Aquatic Assessment • Wetland Assessment • Hydropedology Assessment • WUL application with DWS • Stormwater Management Plan
Archaeology and Cultural Heritage	• Potential impacts to heritage resources	• N/A	• Heritage Impact Assessment • Palaeontology Assessment

8.1.2 SUMMARY OF IMPACTS IDENTIFIED BY IAPS

The comments received during the initial notification period will be summarised in the Comments and Responses Report and attached in the full Public Participation Report as part of the EIA process.

8.2 SPECIALIST STUDIES

According to Münster (2005), a 'trigger' is "*a particular characteristic of either the receiving environment or the proposed project which indicates that there is likely to be an issue and/or potentially significant impact associated with that proposed development that may require specialist input*".

Further, the EIA Regulations, 2014 (as amended) define a specialist as: "*A person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studi*es."

The specialist studies 'triggered' by the findings of the Scoping process include the following:

- Agricultural Assessment,
- Air Quality Impact Assessment
- Terrestrial Biodiversity Assessment,
- Aquatic Impact Assessment,
- Avifaunal Assessment
- Faunal Assessment
- Floral Assessment
- Geohydrological Assessment,
- Hydropedology Assessment,
- Wetland Assessment,
- Heritage Impact Assessment,
- Palaeontology Impact Assessment,
- Noise Impact Assessment; and
- Visual Impact Assessment.
- Climate Change Assessment
- Socio-Economic and Fiscal Impact Assessment

The *Guideline for determining the scope of specialist involvement in EIA processes* (Münster, 2005) was used in compiling the general Terms of Reference for the specialist studies together with the *Guideline for involving biodiversity specialists in EIA processes* (Brownlie, 2005) and the *GDEnv Requirements for Biodiversity Specialists.* In line with these guidelines, specialists will be required to do the following:

- Address all triggers for the specialist studies identified by the Scoping Report.
- Address issues raised by IAPs, as contained in the Comments and Response Report;
- Meet the requirements of the relevant environmental authorities.
- Identify and assess all potentially significant impacts (direct, indirect and cumulative) and suggest suitable mitigation measures.
- Assess alternatives (including the No-Go option) and identify the Best Practicable Environmental Option (BPEO) for the proposed development.

- All specialist reports must adhere to Appendix 6 of the 2014 EIA Regulations.

In addition to the above-mentioned environmental specialist studies, the following technical studies will also be undertaken and will inform the EIA:

- Outline Scheme Report;
- Bulk Sewer Services Report;
- Bulk Water Services Report;
- Electrical Services Report;
- Stormwater Management Plan;
- Transportation Impact Assessment including Fatal Flaw Reports;
- Floodline Delineation Report;
- Integrated Waste Management Plan;
- Geotechnical Assessment;
- Aquifer pump testing results.

Table 8-2 provides an overview of the environmental aspects that will be assessed by specialists.

TABLE 8-2: SUMMARY OF ENVIRONMENTAL ASPECTS TO BE ASSESSED IN THE EIA.

Environmental Aspects	To be assessed by Specialist	Specialist Study
Geology and Soils	Yes	Geotechnical Study Hydropedology Study Agricultural Assessment
Services	Yes	Outline Schemes Report Water, Sewer, Electricity & Stormwater Reports
Access Roads	Yes	Transportation Impact Assessment Fatal Flaw Reports
Biodiversity	Yes	Terrestrial Biodiversity Assessment Avi-Faunal Assessment Faunal Assessment Flora Assessment
Surface Water	Yes	Wetland Assessment Aquatic Assessment Hydropedology Assessment
Heritage and Culture	Yes	Heritage Impact Assessment Palaeontology Impact Assessment
Socio-economic	Yes	Socio-Economic and Fiscal Impact Assessment
Ground Water	Yes	Geohydrology Assessment Aquifer Assessment
Air Quality	Yes	Air Quality Impact Assessment

		Climate Change Assessment
Noise aspects	Yes	Noise Impact Assessment
Visual aspects	Yes	Visual Impact Assessment

8.3 IMPACT ASSESSMENT METHODOLOGY

The standard methodology used in the environmental impact assessment to determine the significance rating of the potential impacts are outlined in this section.

The **significance** of an impact is defined as the combination of the **consequence** of the impact occurring and the **probability** that the impact will occur. The nature and type of impact may be direct or indirect and may also be positive or negative, refer to **Table 8-3**: below for the specific definitions.

TABLE 8-3: NATURE AND TYPE OF IMPACT

	Nature and Type of Impact:		
IMPACT	**Direct**	Impacts that are caused directly by the activity and generally occur at the same time and place as the activity	✓/✗
	Indirect	Indirect or induced changes that may occur as a result of the activity. These include all impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place as a result of the activity	✓/✗
	Cumulative	Those impacts associated with the activity which add to, or interact synergistically with existing impacts of past or existing activities, and include direct or indirect impacts which accumulate over time and space	✓/✗
	Positive	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes will benefit significantly, and includes neutral impacts (those that are not considered to be negative	✓
	Negative	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes will be comprised	✗

Table 8-4: presents the defined criteria used to determine the **consequence** of the impact occurring which incorporates the extent, duration and intensity (severity) of the impact.

TABLE 8-4: CONSEQUENCE OF THE IMPACT OCCURRING

	Extent of Impact:	
CONSEQUENCE	**Site**	Impact is limited to the site and immediate surroundings, within the study site boundary or property (immobile impacts)
	Neighbouring	Impact extends across the site boundary to adjacent properties (mobile impacts)
	Local	Impact occurs within a 5km radius of the site
	Regional	Impact occurs within a provincial boundary
	National	Impact occurs across one or more provincial boundaries
	Duration of Impact:	

	Incidental	The impact will cease almost immediately (within weeks) if the activity is stopped, or may occur during isolated or sporadic incidences
	Short-term	The impact is limited to the construction phase, or the impact will cease within 1 - 2 years if the activity is stopped
	Medium-term	The impact will cease within 5 years if the activity is stopped
	Long-term	The impact will cease after the operational life of the activity, either by natural processes or by human intervention
	Permanent	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient
	Intensity or Severity of Impact:	
	Low	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are not affected
	Low-Medium	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are modified insignificantly
	Medium	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are altered
	Medium-High	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are severely altered
	High	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes will permanently cease

The probability of the impact occurring is the likelihood of the impacts actually occurring and is determined based on the classification provided in **Table 8-5**.

TABLE 8-5: PROBABILITY AND CONFIDENCE OF IMPACT PREDICTION

PROBABILITY	**Probability of Potential Impact Occurrence:**	
	Improbable	The possibility of the impact materialising is very low either because of design or historic experience
	Possible	The possibility of the impact materialising is low either because of design or historic experience
	Likely	There is a possibility that the impact will occur
	Highly Likely	There is a distinct possibility that the impact will occur
	Definite	The impact will occur regardless of any prevention measures

The **significance** of the impact is determined by considering the consequence and probability without taking into account any mitigation or management measures and is then ranked according to the ratings listed in **Table 8-6.** The level of confidence associated with the impact prediction is also considered as low, medium or high (**Table 8-7**).

TABLE 8-6: SIGNIFICANCE RATING OF THE IMPACT

SIGNIFICANCE	**Significance Ratings:**	
	Low	Neither environmental nor social and cultural receptors will be adversely affected by the impact. Management measures are usually not provided for low impacts
	Low-Medium	Management measures are usually encouraged to ensure that the impacts remain of Low-Medium significance. Management measures may be proposed to ensure that the significance ranking remains low-medium

	Medium	Natural, cultural and/or social functions and processes are altered by the activities, and management measures must be provided to reduce the significance rating
	Medium-High	Natural, cultural and/or social functions and processes are altered significantly by the activities, although management measures may still be feasible
	High	Natural, cultural, and/or social functions and processes are adversely affected by the activities. The precautionary approach will be adopted for all high significant impacts, and all possible measures must be taken to reduce the impact

TABLE 8-7: LEVEL OF CONFIDENCE OF THE IMPACT PREDICTION

	Level of Confidence in the Impact Prediction:	
CONFIDENCE	**Low**	Less than 40% sure of impact prediction due to gaps in specialist knowledge and/or availability of information
	Medium	Between 40 and 70% sure of impact prediction due to limited specialist knowledge and/or availability of information
	High	Greater than 70% sure of impact prediction due to outcome of specialist knowledge and/or availability of information

Once significance rating has been determined for each impact, management and mitigation measures must be determined for all impacts that have a significance ranking of Medium and higher in order to attempt to reduce the level of significance that the impact may reflect.

The EIA Regulations, 2014 specifically require a description is provided of the degree to which these impacts:

- can be reversed;
- may cause irreplaceable loss of resources; and
- can be avoided, managed or mitigated.

Based on the proposed mitigation measures the EAP will determine a mitigation efficiency (**Table 8-8**) whereby the initial significance is re-evaluated and ranked again to affect a significance that incorporates the mitigation based on its effectiveness. The overall significance is then reranked and a final significance rating is determined.

TABLE 8-8: MITIGATION EFFICIENCY

	Mitigation Efficiency	
MITIGATION EFFICIENCY	**None**	Not applicable
	Very Low	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact. Positive impacts will remain the same
	Low	Where the significance rating reduces by one level, after mitigation
	Medium	Where the significance rating reduces by two levels, after mitigation
	High	Where the significance rating reduces by three levels, after mitigation
	Very High	Where the significance rating reduces by more than three levels, after mitigation

The reversibility is directly proportional the “Loss of Resource” where no loss of resource is experienced, the impact is completely reversible; where a substantial “Loss of resource” is experienced there is a medium

degree of reversibility; and an irreversible impact relates to a complete loss of resources, i.e. irreplaceable (**Table 8-9**).

TABLE 8-9: DEGREE OF REVERSIBILITY AND LOSS OF RESOURCES

DEGREE REVERSABILITY & LOSS OF RESOURCES		
	Loss of Resources:	
	No Loss	No loss of social, cultural and/or ecological resource(s) are experienced. Positive impacts will not experience resource loss
	Partial	The activity results in an insignificant or partial loss of social, cultural and/or ecological resource(s)
	Substantial	The activity results in a significant loss of social, cultural and/or ecological resource(s)
	Irreplaceable	The activity results in the complete and irreplaceable social, cultural and/or ecological loss of resource(s)
	Reversibility:	
	Irreversible	Impacts on natural, cultural and/or social functions and processes are irreversible to the pre-impacted state in such a way that the application of resources will not cause any degree of reversibility
	Medium Degree	Impacts on natural, cultural and/or social functions and processes are partially reversible to the pre-impacted state if less than 50% resources are applied
	High Degree	Impacts on natural, cultural and/or social functions and processes are partially reversible to the pre-impacted state if more than 50% resources are applied
	Reversible	Impacts on natural, cultural and/or social functions and processes are fully reversible to the pre-impacted state if adequate resources are applied

8.3.1 CUMULATIVE IMPACTS

It is important to assess the natural environment using a systems approach that will consider the cumulative impact of various actions. Cumulative impact refers to the impact on the environment, which results from the incremental impact of the actions when added to other past, present and reasonably foreseeable future actions regardless of what agencies or persons undertake such actions. Cumulative impacts can result from individually minor, but collectively significant actions or activities taking place over a period of time. Cumulative effects can take place frequently and over a period of time that the effects cannot be assimilated by the environment.

8.4 MITIGATION

According to the EIA Regulations, 2014, "mitigation" means to "*anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible*". Based on this definition, it possible to see that a mitigation hierarchy exists (**Figure 8-1**).

At the bottom of this hierarchy is the most preferred option which includes **prevention (1).** These mitigation measures aim to avoid impacts completely.

The second level of mitigation is **reduction (2)** which involves mitigation measures that minimise impacts.

Mitigation measures also include **remediation measures (3)** for environmental impacts. These measures focus on remediating or rehabilitating areas after they have been impacted.

Compensation (4) involves compensating the loss of an entire feature. In the case for the environment, this usually means consideration of an off-set associated with rehabilitation and mitigation.

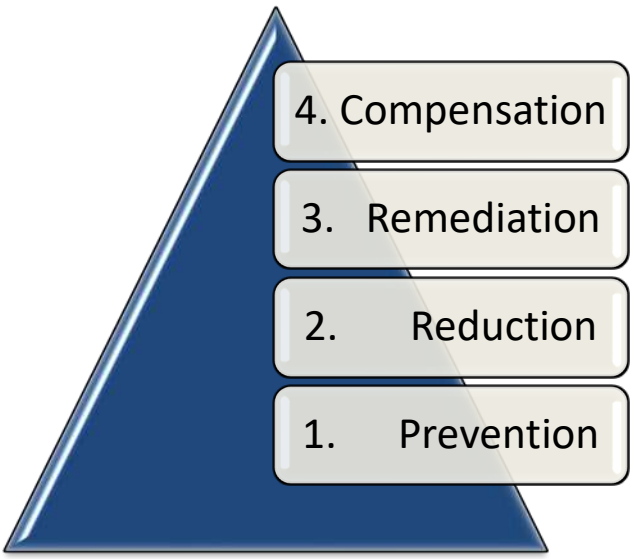


FIGURE 8-1: MITIGATION HIERARCHY

A Construction and Operational EMPr will be developed based on the findings of the impact assessment of the EIA and in line with the requirements of Appendix 4 of GN 982 of 4 December 2014. The EMPr represents a detailed plan of action and includes site-specific mitigation measures for all medium to high (significant) impacts. The mitigation and management measures will include a combination of the following:

- Physical environmental management structures.
- Monitoring and compliance of pollution and regulatory requirements.

All liability for the implementation of the EMPr (as well as the EIA findings and environmental authorisation) lies with the project applicant which in this case is **VAAL AEROZONE (PTY) LTD.**

8.5 ENVIRONMENTAL IMPACT ASSESSMENT PHASE

The next steps in the EIA phase will be undertaken upon completion of the scoping phase (i.e. after the submission and acceptance of this Scoping Report by the GDEnv). During the EIA phase, specialist studies will be conducted and/or finalised to inform the environmental impact assessment. Concerns raised by I&AP's pertaining to the proposed development and their potential impacts on the physical, biological aspects of the proposed site will also be assessed at an appropriate level of detail.

The findings, recommendations and statements compiled by the specialists will be integrated with the other environmental aspects and compiled into an EIA Report and provided to the relevant organs of state and

registered I&AP's for review and comment for a minimum period of 30 days. Refer to **Table 8-10** below for an indication of key dates. All comments received from any authority, I&AP and specialist will be considered and incorporated in the EIA Report for final submission to GDEnv for an evaluation and assessment in order to provide a decision on whether to grant or refuse the environmental authorisation.

TABLE 8-10: PROPOSED TIMEFRAMES FOR THE EIA PROCESS

Responsible Role Player	Milestone Tasks	Required Time Period	Proposed Timeframes	Status
Initial Notification Phase				
PPP	Written, Newspaper, Site Notices & BID's	60 days	01 October 2026 – 02 December 2026	**In progress**
Specialist Studies and Development Layout Planning				
Specialist Studies	Site Visits and Reporting	N/A	February 2024 – December 2026	✓
Technical Studies	Site Visits and Reporting Liaison with Authorities	N/A	March 2024 & October 2026	✓
Scoping and Application Phase				
EAP	Compile Scoping Report and Application form	N/A	September 2026 – October 2026	✓
EAP	Submit Application for EA Submit Scoping Report for Authority and Public Review	N/A	December 2026 30 September 2026	**In progress**
GDEnv	Accept/Acknowledge Application for EA	10 days	December 2026 / January 2027	**In progress**
PPP	I&AP Comment Period on Scoping Report	60 days	01 October 2026 – 02 December 2026	**In progress**
EAP	Review / Incorporate Comments	5 days		×
GDEnv	Review Scoping Report	43 days		×
Impact Assessment Phase				
EAP	Compile EIA Report	N/A	18 January – 18 February 2027	×
PPP	I&AP Comment on EIA Report	30 days	19 February – 19 March 2027	×
EAP	Review / Incorporate Comments	2 days	23 March – 19 April 2027	×
GDEnv	Review EIA Report and Provide Decision	106 days	April 2027 – August 2027	×
PPP	Notification of Decision / Appeal		August 2027	×

9. EAP UNDERTAKING

I, **De Wet Botha**, as the Environmental Assessment Practitioner managing this application provide the following affirmation in relation to -

- the correctness of the information provided in the report;
- the inclusion of comments and inputs from stakeholders and interested and affected parties; and
- any information provided myself to interested and affected parties and any responses to comments or inputs made by interested and affected parties.
- the level of agreement between myself and interested and affected parties on the plan of study for undertaking the environmental impact assessment.

Designation: Senior Environmental Assessment Practitioner

Prism Environmental Management Services Africa

Company

24 September 2026

Date

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Appendix A2	-	Company Profile

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Appendix B3	-	Alternative Road Interchange (Narrow Diamond Interchange)
Appendix B4	-	Alternative Stormwater Plan (Aerotropolis Precinct)
Appendix B5	-	Alternative Stormwater Plan (Road Interchange)

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Appendix C13	-	C-Plan v4
Appendix C14	-	Gauteng EMF
Appendix C15	-	IBA & Protected Area Map
Appendix C16	-	Surface Water Map
Appendix C17	-	Groundwater Abstraction Points Map
Appendix C18	-	Master Plan - Vaal Aerotropolis
Appendix C19	-	Water and Fire Water Services Plan
Appendix C20	-	Sewer Services Plan
Appendix C21	-	Road Network Design Plan
Appendix C22	-	Stormwater Design Plan
Appendix C23	-	Electricity Design Plan

Appendix D – Public Participation Process

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Appendix D3	-	Background Information Document
Appendix D4	-	Proof of Initial Notification *(to follow)*
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Appendix D6	-	Comments and Responses Report *(to follow)*
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Appendix D8	-	Comments during Initial Notification *(to follow)*
Appendix D9	-	Comments during Review of Scoping Report *(to follow)*
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Appendix E – National Screening Tool

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Appendix G – WUL

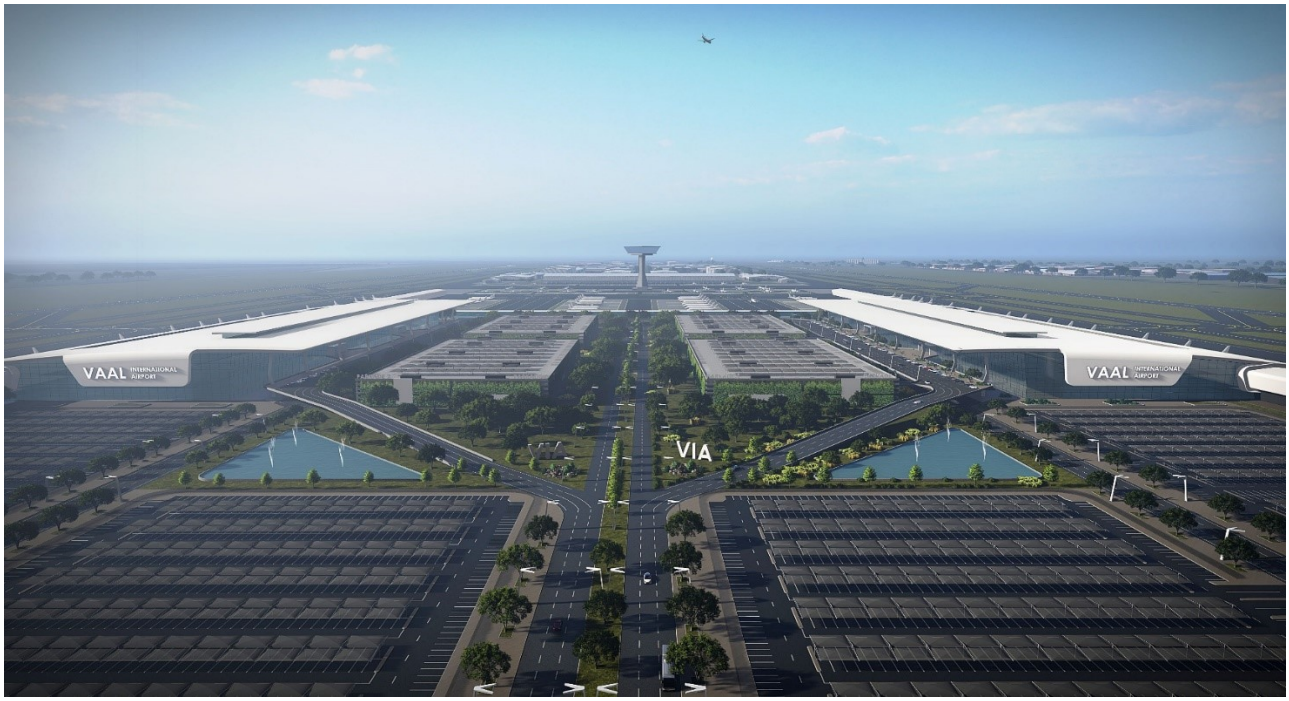
Appendix G1	-	Prelim WULA Summery Report

ANNEXURE K

VAAL AEROTROPOLIS DESIGN (Pty) Ltd

VAAL AEROTROPOLIS

ENGINEERING SERVICES REPORT



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CONSULTANT

WSP Group Africa (Pty) Ltd

Building 1, Maxwell Office Park

Magwa Crescent West, Waterfall City

Midrand, 1685

South Africa

Phone: +27 11 254 4800

WSP.com

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Checked by	John Rammutla (Pr. Eng) Project Manager	John Rammutla (Pr. Eng) Project Manager		
Signature				
Authorised by	Sameshan Naidoo (Pr. Eng) Project Director	Sameshan Naidoo (Pr. Eng) Project Director		
Signature				
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List of Abbreviations

Abbreviation	Meaning
A	Amperes
AADD	Average Annual Daily Demand
AC	Alternating Current
A/C	Air Conditioning
AL	Aluminium
ATC	Automatic Transfer Controller
ATS	Automatic Transfer Switch
BCI	Business, Commercial, Industrial
C.F	Correction Factor
C/B	Circuit Breaker
CCTV	Closed Circuit Television
CEF	Cost Estimate Fee
CEL	Cost Estimate Letter
CHIRPS	Climate Hazards Group InfraRed Precipitation
CT	Current Transformer
DPFR	Design Peak Flow Rate
ELM	Emfuleni Local Municipality
EM	Emergency
EMT	Electrical Metallic Tubing
EP	Emergency Power
F	Fuse

FA	Fire Alarm
FAA	Fire Alarm Annunciator
FACP	Fire Alarm Control Pane
FLA	Full Load Amperes
G	Ground
GADD	Gross Annual Daily Demand
GND	Ground
HVAC	Heating, Ventilation, Air Conditioning
IEEE	Institute of Electrical and Electronic Engineers
INT	Interlock
IPF	Instantaneous Peak Factor
KVA	Kilovolt-Amperes
KVAR	Kilovolt-Amperes Reactive
LHS	Left Hand Sde
LV	Low Voltage
MAP	Mean Annual Precipitation
MCB	Main Circuit Breaker
MCC	Motor Control Center
MTS	Main Transmission Substation
MV	Medium Voltage
MVA	Mega Volt Ampere
MW	Megawatt
ND	Nominal Diameter

PH	Phase
PVC	Poly Vinyl Chloride
PV	Photovoltaic
RHS	Right hand Side
RMU	Ring Main Unit
RW	Rand Water
SAWS	South African Weather Services
CADA	Supervisory Control And Data Acquisition
SPV	Special Purpose Vehicle
SRTM	Shuttle Radar Topography Mission
SuDS	Sustainable Drainage Systems
SUH	Synthetic Unit Hydrograph
TAMSAT	Tropical Applications of Meteorology
TRF	Transformer
UPS	Uninterruptable Power Supply
UV	Ultraviolet
V	Volt
VA	Volt-Ampere
VFD	Variable Frequency Drive
W	Watt
WTP	Water Treatment Plant
WWTW/P	Wastewater Treatment Works/Plant
XLPE	Cross Linked Polyethylene

1 INTRODUCTION

1.1 BACKGROUND

The Vaal Aerotropolis Management Company (VAMC) seeks to implement the second phase of the Vaal Aerotropolis development process, the Land Preparation Phase. As part of this phase, WSP through the VAMC's appointed implementing agent Vaal Aerotropolis Design (Pty) Ltd, was appointed to prepare and deliver the Bulk Engineering Services Report, consistent with the latest concept masterplan of the development.

The purpose of the Bulk Infrastructure Services Report is to report on the availability and capacity of proposed engineering bulk services that will be required to support the proposed development. The report will present findings of preliminary site investigations relating to bulk services (and further sets out the criteria and standards for engineering services. Furthermore, the report will seek to illustrate the procedures that will be used to design the required services.

6 GEOTECHNICAL INVESTIGATION

The geotechnical section of this report provides an overview of the preliminary geotechnical investigation conducted by PeraGage (Pty) Ltd for the proposed Vaal Aerotropolis development. The preliminary shallow soil investigation was conducted to establish if a parcel of land was suitable for the proposed development and for application purposes that would form part of the EIA process. The investigation, limited to trial pit excavations and a desktop study, provided a preliminary understanding of the site's geotechnical characteristics and outlined the constraints and considerations for future detailed investigations.

6.1 REGIONAL AND SITE-SPECIFIC GEOLOGY

The site was underlain by rocks of the Pretoria Group, including shale, quartzite, and conglomerate, covered by transported and residual soils. A cropped section of the regional geology is depicted in Figure 6-1.

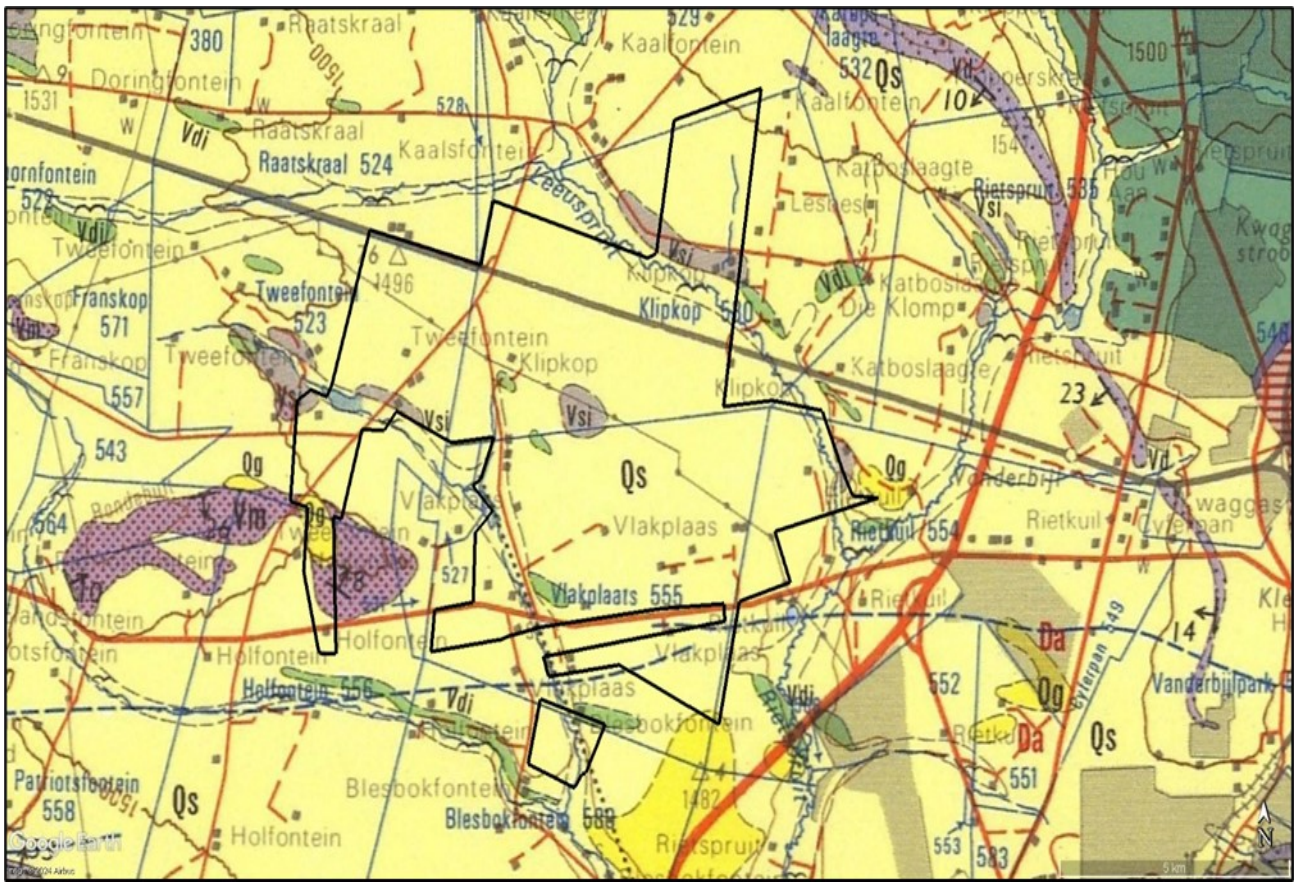

Figure 6-1 - Regional Geological sheet (cropped 1:250 000 scale of 2626 West Rand)

Based on the geological data, the site contained a prominent west-east striking structure, likely a diabase dyke, situated in its southern portion. The region featured numerous diabase dykes, while no other significant linear features such as faults or shears were identified near the site. The geological maps and accompanying explanations confirmed the absence of specific mineral deposits and water-soluble rocks like dolomite or limestone. Consequently, the site was classified as “non-dolomitic land,” posing no risk of sinkholes or subsidence caused by soluble rock formations.

6.2 GEOTECHNICAL INVESTIGATION

The preliminary level geotechnical investigation was carried out between the 19th and 22st August 2024 and comprised of 25 excavated test pits using a CASE 570T tractor loader backhoe (TLB) and profiling by an engineering geologist. No laboratory tests were conducted on the material excavated from the test pits.

Based on the limited excavated testpit soil profiles and readily available information, the regional area is generally covered with an upper topsoil with localised fill material towards existing infrastructures. The topsoil horizon is generally underlain by colluvial and alluvial transported materials with the alluvium materials situated near low-lying drainage areas. A pebble marker horizon or pedogenic formation underlies the abovementioned transported horizons and separates the transported material from the in-situ residual soils. The typical residual material encountered are residual shale, residual quartzite, and localised residual diabase of which the diabase and quartzites are the lessor. The residual horizons generally transition to the respective parent rock type's weathered state which were general gradual with occasional sudden transitions.

Ferricrete were also encountered in the test pits and were recorded as well developed nodular, honeycomb and localised hardpan ferricrete. The locality of the excavated test pit positions is illustrated in Figure 6-2.

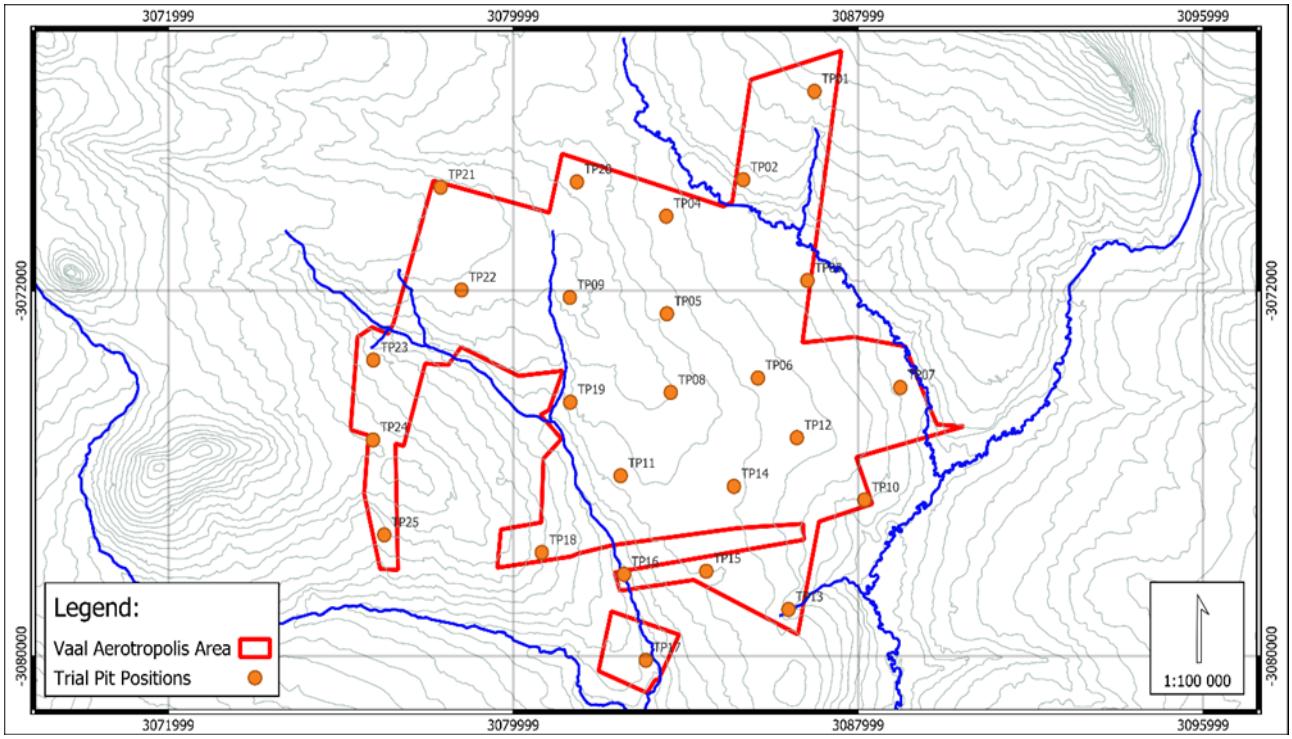

Figure 6-2 - Excavated Limited Test Pit Positions

The general simplified soil profiles and rock profiles encountered in the trail pits is described as follows:

- A **topsoil** horizon generally has an open structure and loose consistency. The horizon was encountered to a depth of 0.20 to 0.40 mbgl;
- A loose to occasionally medium dense **colluvium** horizon with a voided to open structure was encountered to a depth of 0.50 to 1.00 mbgl. Locally slightly ferruginised colluvium was encountered to a depth of 1.90 mbgl in trial pit TP01.
- Alluvium material was encountered from a depth of 0.20 mbgl to varying depth between 0.90 to 3.20 mbgl. The typical alluvium material transitions from a stiff sandy clay to a firm clayey sand in the upper profiles to a sandy clayey silt or clayey sandy silt in the deeper profiles.
- Generally, a **pebble marker** horizon was encountered at the base of the transported horizons. The pebble marker was generally encountered at shallow depths at approximately 1.00 mbgl but locally down at termination depths of the test pits at approximately 3.00 mbgl (test pit TP15 and TP16). This layer is usually described as medium dense to firm, open in structure, and contains a mix of sub-rounded and occasionally angular gravels. It is often associated with a slight ferruginous.
- **Pedogenic formations (honeycomb to nodular ferricrete)** were also encountered at the base of the transported materiel with a medium dense to firm in-situ consistency.
- **Residual shale** was generally encountered below the pebble marker and/or pedogenic formations down to depth. The material was generally described as yellowish-brown to

blotched or mottled shades of grey, black, red, and occasionally orange. It is generally stiff to firm, characterized by fissures and occasional shattered or pinholed textures, indicative of its weathered and fragmented state. The material is composed of a mix of clayey, sandy, and gravelly silt, with weakly to moderately cemented nodules of iron and manganese oxides contributing to its slightly ferruginised nature. Residual shale may also contain sub-angular gravel-sized shale fragments, and while it is relatively stable, variations in its density and moisture content can be encountered depending on its depth and degree of weathering.

- **Weathered shale** was locally encountered below the residual shale in test pits. The weathered shale was in a completely to highly weathered state and profiled as extremely weak to very weak rock. The weathered shale is highly fractured and very intensely laminated.
- **Locally residual quartzite** was encountered at test pit TP18 from 0.9 to 1.50 mbgl. The horizon was described as slightly moist, red, blotched orange, mottled black, medium dense to dense, voided, clayey gravelly silty sand with sub-angular quartzite boulder to the base of the zone.
- **Residual diabase** with cobble size core stones were also identified at an existing borrow pit located near TP21.

6.3 PRELIMINARY GEOTECHNICAL CONSTRAINTS

The site evaluation and expected preliminary geotechnical constraints are based on a data retrieved form a desktop study, limited soil profiles from test pits and open road cuts or borrowed areas, site drive-over survey and satellite imagery.

The major geotechnical constraints identified included:

- Open-structured topsoils, colluvium, and residuum with slight collapse potential in the uncompacted state.
- Seasonal seepage and saturated soil profiles after heavy rainfall, exacerbated by prominent pedogenic formations.
- Expansive potential in alluvium and residuum soils, such as diabase and Silverton shales.
- Medium compressibility of alluvium and residual soils due to their fine silt and clay content.
- High erosion susceptibility of upper soils if exposed to concentrated water flow.
- Localised excavation difficulties due to ferricrete, shallow bedrock, and large boulders or corestones requiring pneumatic equipment or blasting.
- Seismic activity in the region necessitating design considerations for structural safety. Site falls in Zone II with a peak ground acceleration of 0.1 to 0.2 g.
- Flood-prone areas near drainage channels or with slopes less than 1%.

Additional constraints identified included:

- Site slope that is expected to require cut-to-fill-to-level platform preparation for small to large structures and potential major cut-to-fill-to-level preparation for the runway.

- Expected localised large size boulders or corestones that may result in composite founding conditions where foundations span incompressible competent material and compressible soil.
- Soils with an expected unfavourable aggressiveness rating towards ferrous metals/services.
- Presence of localised trees with root systems and historic soak away/French drain systems that may affect the soils negatively if removed that will require rehabilitation or foundation modifications.
- Foundations and/or underground services that may result in composite founding conditions; and
- Localised areas of surficial uncontrolled fill/rubble that are expected to result in composite founding conditions that will require minor site preparation in these affected areas.
-

6.4 PRELIMINARY GEOTECHNICAL ZONATION

The site has been divided into four preliminary zones (FACET I-IV) based on geotechnical conditions. The simplified expected conditions for each FACET zone are summarised in Table 7-1.

Table 6-1 – Facet Zone Conditions

FACET	Major Geotechnical Constraints
I	• Compressible and potentially collapsible soils • Potentially expansive soils • Expected localised well cemented pedogenic formations, shallow bedrock and/or large size boulders or corestones that may cause severe excavation difficulty • Shallow seasonal groundwater seepage and localised ponding water that will necessitate mitigation such as subsoil drainage and pioneer layer construction • Erodibility of upper soils • Areas situated adjacent to known drainage channel or floodplain with slope less than 1 % • Localised fill material with existing structures and foundations
II	• Expected prominent severe waterlogged to shallow water seepage conditions • Compressible soils • Potentially expansive soils • Expected shallow well cemented pedogenic formations that may cause severe excavation difficulty
III	• Excavation difficulties on localised outcropping to shallow bedrock and/ or shallow well cemented pedogenic formation that may cause severe excavation difficulties • Expected thin potentially collapsible soils • Erodibility of upper soils • Shallow seasonal seepage and ponding water

IV	• Areas previously borrowed with ditches and trenches that may need to be rehabilitated • Water ponding in holes and depressions • Uncontrolled fill of varying composition • Erosion of induced steep angles of the borrow pit sidewalls

The preliminary FACET zones are shown in Figure 7-3.

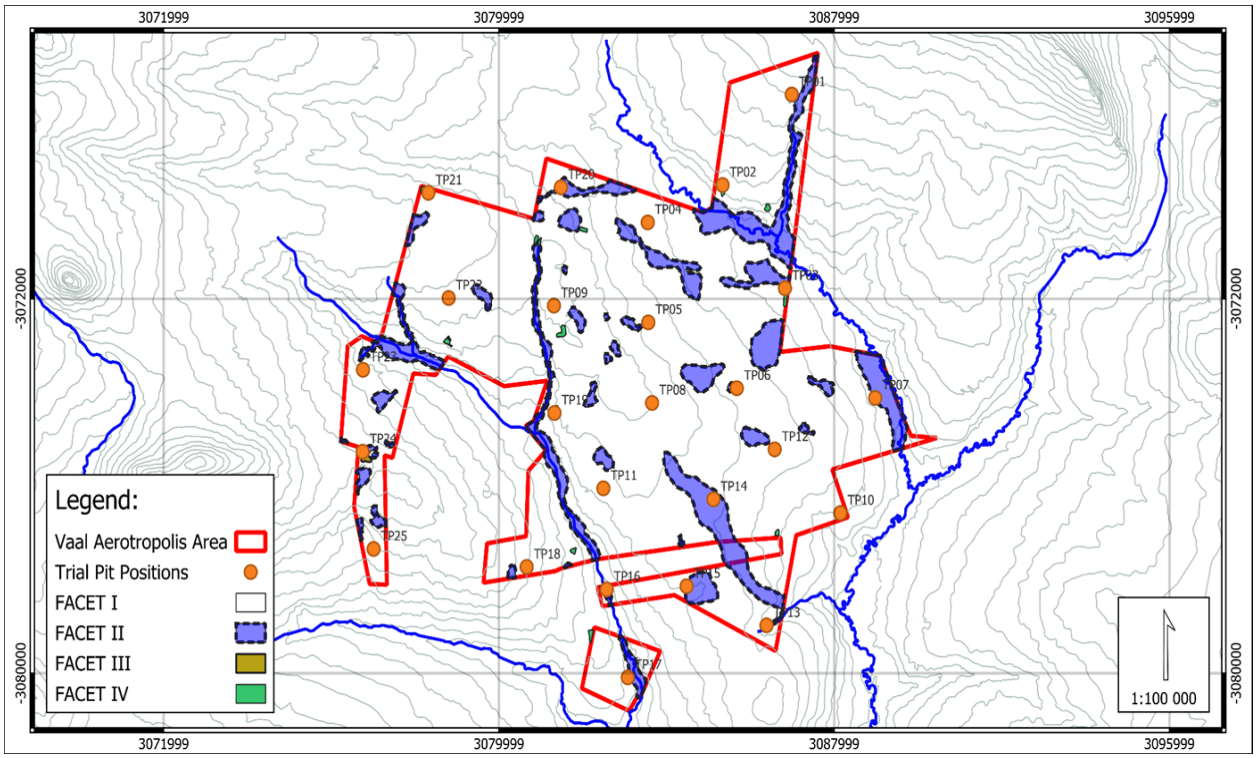

Figure 6-3 - Preliminary FACET Zones

6.5 EXPECTED MATERIAL UTILISATION

Based on the information retrieved during the desktop study and local knowledge of the area, the preferred material to target for construction materials is the ferricrete and quartzite. The information herein is sourced from regional reports on similar materials. Laboratory test would however be required to confirm the following:

Ferricrete is expected to be usable as a construction aggregate when its well-developed and well-cemented. Nodular, honeycomb and hardpan ferricrete can provide G5 to G7 when the material is moderately to strongly cemented. Weakly to very weakly cemented ferricrete will breakdown into fines when wetted and placed under a dynamic load, such as compaction from a vibrating roller, but can provide a G8 to G9 material. The typical constraint of ferricrete is the variability in thickness and degree of cementation.

Shales from the Silverton Formation are expected to classify as G6 to >G9 material in the unweathered to completely weathered state.

Pebble Marker zone is expected to classify as A-2 to A-4, SC/SM to GC and G7 to G8 depending on the grading.

The **diabase** rock in the region generally weathers to a sandy silt with minor amounts of sand and gravel. The upper and lower diabase residuum materials are expected to classify as “CL to ML”, “SC” or “GC” according to the Unified Soil Classification System. The residual diabase is expected to classify as G8 to >G9 material.

6.6 LIMITATIONS OF THE INVESTIGATION AND WAY FORWARD

The preliminary investigation acknowledges that geological and geotechnical conditions can vary significantly across a site. Localised variations in subsurface conditions that were not identified during this phase may exist. Therefore, the engineering recommendations provided are provisional and should be confirmed through further investigations and testing before any definitive conclusions or designs are finalised.

Over time, site conditions may evolve due to natural processes or human activities, and modifications to the proposed development may influence these conditions. If a significant time lapse occurs between the issuance of this report and the commencement of work, or if changes take place on or near the site, WSP advises revisiting the findings of the preliminary investigation to ensure the continued accuracy and applicability of its recommendations.

During the preliminary investigation, efforts were made to identify different geological materials, perched water tables, hydrogeological conditions, and areas with poor drainage. However, isolated zones with significantly different conditions may not have been identified. The primary purpose of this investigation is to highlight the most critical geotechnical concerns that could affect the proposed development, providing the client with early-stage guidance.

Building 1, Maxwell Office Park
Magwa Crescent West, Waterfall City
Midrand, 1685
South Africa

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SPECIALIST GEOTECHNICAL ENGINEERS

Report on the Geotechnical Desktop Study for

Vaal Aerotropolis

Gauteng, South Africa

Report no.: 0614-DS-Rev0(GT24095G-01)

April 2024

www.peragage.com

Gauteng: Block C, Irene Link, Cnr Botha Avenue and N1 Highway, Irene, Centurion
Eastern Cape: Harbour View Building, 1st Floor, Oakworth Road, Gqeberha
Western Cape: The Colosseum, F3 1st Floor, Century Way, Cape Town
PO Box 71572, Bryanston, 2021 South Africa
+27 (0)12 001 0573 | **www.peragage.com**

Report to: WSP in Africa

Maxwell Office Park, Magwa Cres, Midrand, 1685

Project name: Vaal Aerotropolis

Report title: Report on the Geotechnical Desktop Study for Vaal Aerotropolis Framework

Report number: 0614-DS-Rev0(GT24095G-01)

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Revision Details	Final Report

Report by	Reviewed by
Kobus Roux Pr.Sci.Nat Senior Engineering Geologist BSc Hons (Engineering Geology)	**Steven Bok** Pr.Sci.Nat Technical Director - Engineering Geology BSc BScHons(Geology)

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1 Introduction and Terms of References

PeraGage South Africa (Pty) Ltd (PeraGage) has been appointed by WSP In Africa to undertake a geotechnical desktop study for the proposed Vaal Aerotropolis stretching over an approximate area of 5 367 hectares in the Sedibeng District, Gauteng Province, South Africa.

The aim of the desk study is to review readily available information about the site's geological conditions, associated soils and anticipated engineering geological constraints of the rock and soil material towards development.

The client was informed that the desktop study is deemed suitable for high level informational purposes only and that a more detailed site investigation should be conducted for basic planning purposes. The report provides the findings and way forward.

1.1 Objectives of the Study

The key objectives of the investigation are to identify geotechnical constraints that may limit the development or result in increased risk or costs. The objectives are expanded below:

- Gathering of existing and readily accessible information in the area of interest;
- Describe the geological conditions beneath the project footprint;
- Interpretation of the available information in order to identify expected constraints that may affect the developability of the site;
- Identify geotechnical fatal flaws;
- Comment on the expected on-site material performance for general construction applications; and
- Recommend the way forward with specific reference to required studies/investigations.

1.2 Assumptions and Limitations

This report is based on drive-over survey and desktop study with limited data obtained from readily available resources in the public domain. Intrusive investigations were not undertaken. As such, it is not likely to reveal the detail of conditions that will become evident during an investigation and the construction of the project. Conditions at variance with those described in this report may be encountered.

The evaluation is intended only to meet the requirements of a high-level assessment suited to the preliminary planning stage of the project.

This report has been prepared for the exclusive use of the client, with specific application to the proposed project.

1.3 Methodology

The methodology comprised the following:

- Desk study of readily available information, reports and maps in the region.
- Site visit and drive-over survey with visual inspection of surface conditions and existing profile exposures in accessible areas.
- Reporting on the expected geotechnical conditions for the proposed development as from a geotechnical perspective.

The drive-over survey was conducted on 4 April 2024.

1.4 Proposed Development

The Vaal Aerotropolis development will be a combination of various infrastructure such as:

- Airport;
- Railway hub;
- Agricultural hub; and
- Commercial and residential infrastructure.

The proposed conceptual layout plan is depicted in **Figure 1**.

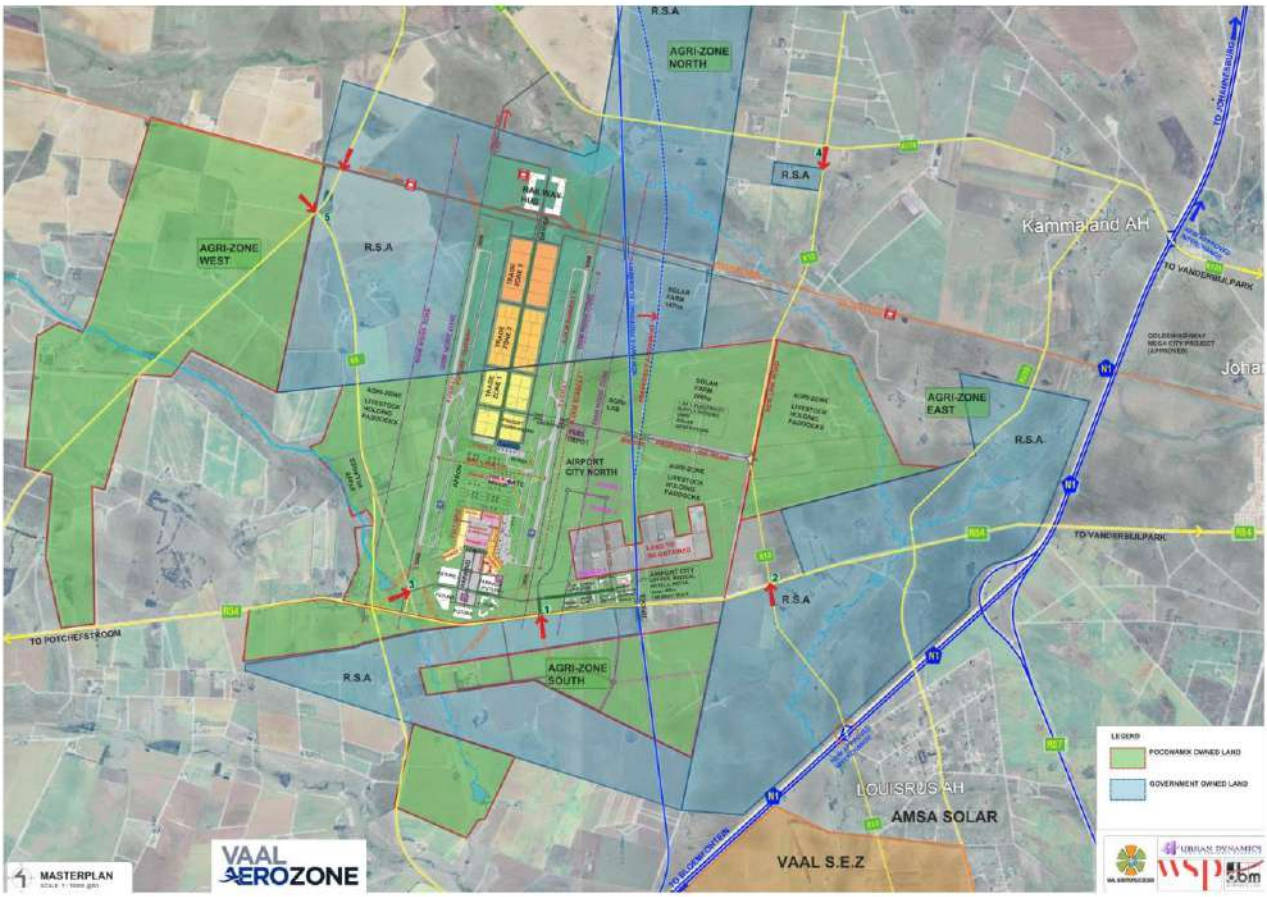

Figure 1: Proposed conceptual layout plan of the Vaal Aerotropolis

1.5 Information Sources

The available information considered during this study comprised:

- 1:250 000 scale Geological Map 2626 East Rand;
- 1:50 000 scale Geological Map 2627DB;
- 1:50 000 scale Geotechnical Map 2627DB;
- 1:50 000 scale Topographical Sheets 2627DA and 2627DB;
- Provided locality map;
- Google Earth satellite imagery;
- LiDAR imagery provided by the client;
- Climate-date.org database; and
- Various literature as referenced.

1.6 Codes of Practice

The services performed by PeraGage are conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the geotechnical profession practicing under similar conditions in the locality of the project. The study is based on the requirements for a desktop study or pre-feasibility level investigation in terms of the SANS634 (2012) Geotechnical Investigations for Township Development and SAICE Geotechnical Division (2010) Code of Practice for Site Investigations.

2 Site Characterisation

2.1 Locality and Site Description

The proposed development is located on numerous portions of agricultural land west of Sebokeng and to the north-west of Vanderbijlpark, in the Sedibeng and West Rand District Municipalities. The area of interest is situated approximately 1 to 3 km to the north-west and west of the N1 highway with the R54 bisecting the southern portion of the site. The site is trafficable and accessible from the R54 Road and D1017 Road.

The area of interest has a surface area of approximately 5 367 ha. The area of interest is depicted in **Figure 2**.

The approximate centre coordinates of the area of interest are (Decimal Degrees):

Latitude: -26.593656°

Longitude: 27.700704°

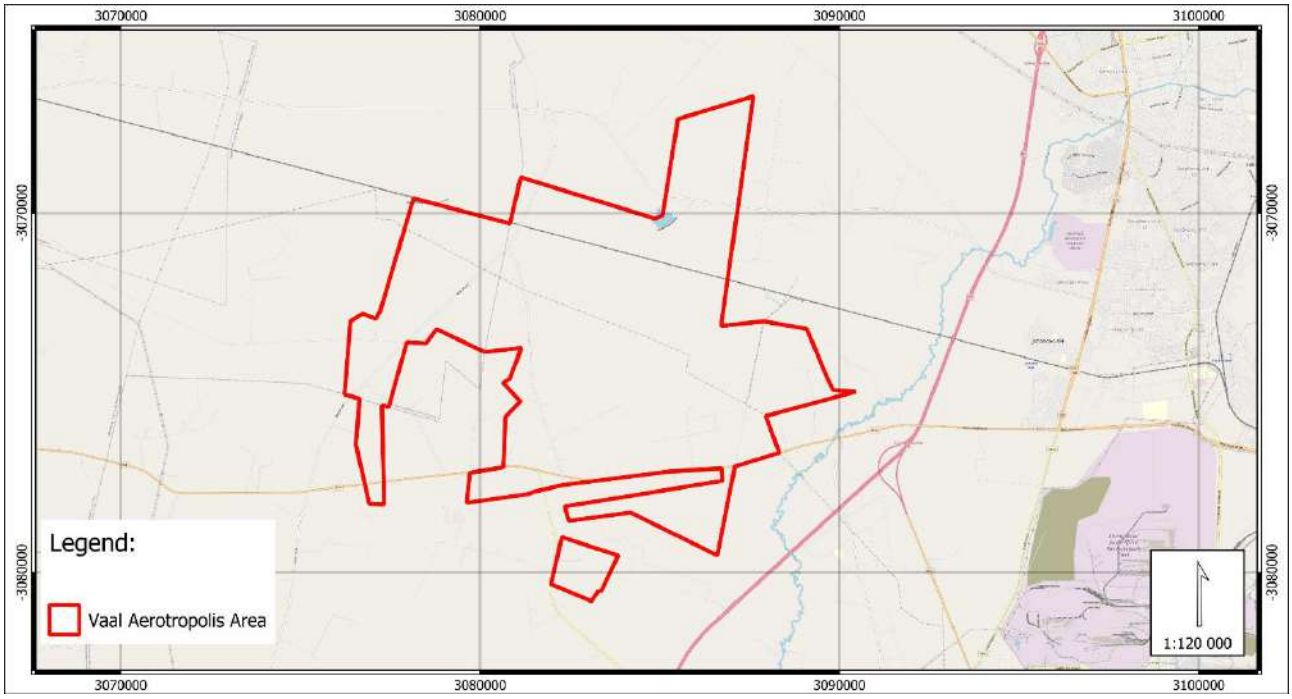

Figure 2: Site locality

The majority of the site is generally undeveloped and covered with natural grass, agricultural crops and localised small to large sized trees and shrubs.

Based on the drive-over survey and historic aerial imagery, localised single to double storey farm dwellings with outbuildings are scattered across the area of interest. Areas of domestic waste, organic material, old foundations, French/soak away systems and construction rubble can be expected at, but not limited to, the existing farm dwellings and outbuildings.

Small termite mounds and animal burrows are present across the area of interest.

Numerous shallow small diggings or borrow areas are situated next to the road infrastructure across the area of interest. Pedogenic materials such as ferricrete was seemingly borrowed for road construction material. Typical borrow areas encountered during the drive-over survey are depicted in Photograph 1 and Photograph 2.

Photograph 1: Typical borrow area to the northern portion of the site

Photograph 2: Typical borrow area to the centre portion of the site

Grave sites have also been encountered during the drive-over survey.

The presence of existing bulk services is unknown and falls outside the scope of the desktop study. Existing and planned services should be confirmed in the services reports. The planners should refer to the services report for planning purposes.

2.2 Current Land Use

Currently the area of interest is generally used for agricultural purposes. The proposed areas have not undergone any formal township development.

2.3 Topography and Drainage

The area of interest is situated between approximately 1 507 and 1 454 mamsl (meters above mean sea level), based on Google Earth contour data. The current slope angles/directions vary across the site due to the nature of the geomorphological setting. These are low relief with slope forms varying between concave and convex shapes. The general site-specific slope directions are towards the drainage features situated across the site. The slope angles across the site, have gentle slope angles with average gradients of <2 degrees. The unchanneled drainage features and valley bottom traverses have relative flat-lying to slightly steeper slopes with gradients of <6 degrees.

A cropped section of the topography sheet is depicted in **Figure 3**. The provided site-specific 0.5 and 2 to 4m LiDAR contour data is depicted in **Figure 4**.

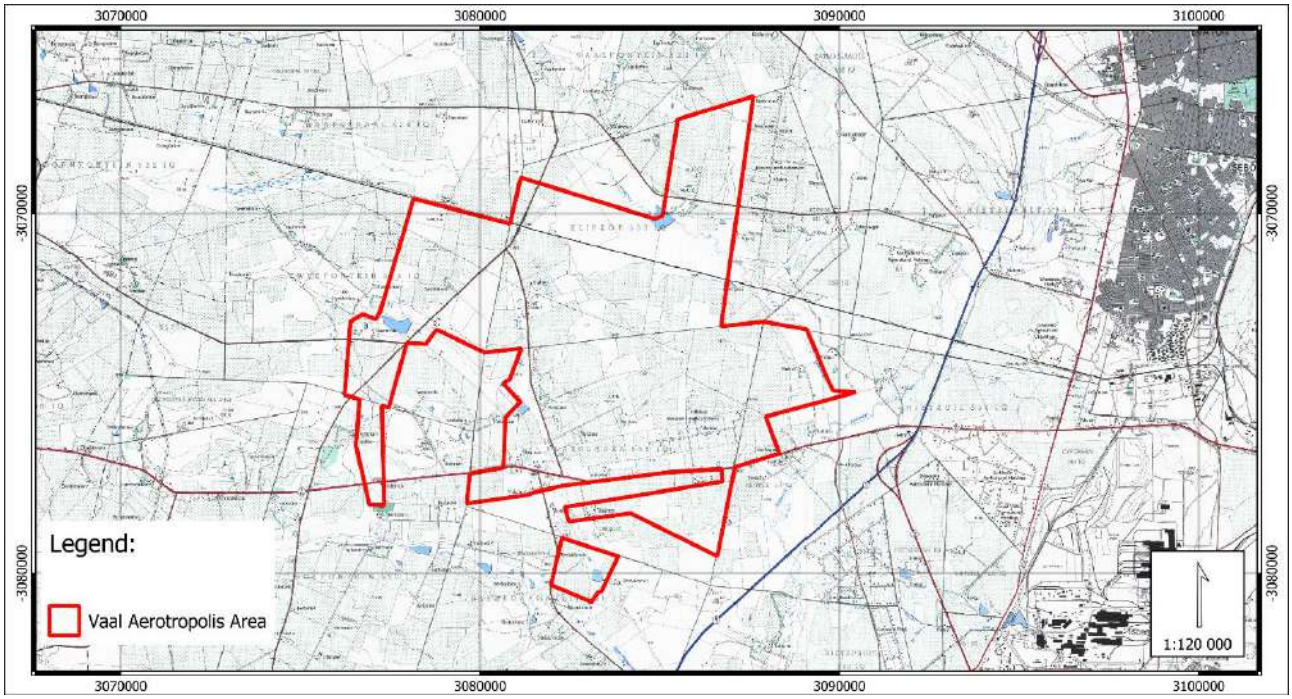

Figure 3: Regional Topographical Sheet (Cropped 1:50 000-scale 2627DA and 2627DB)

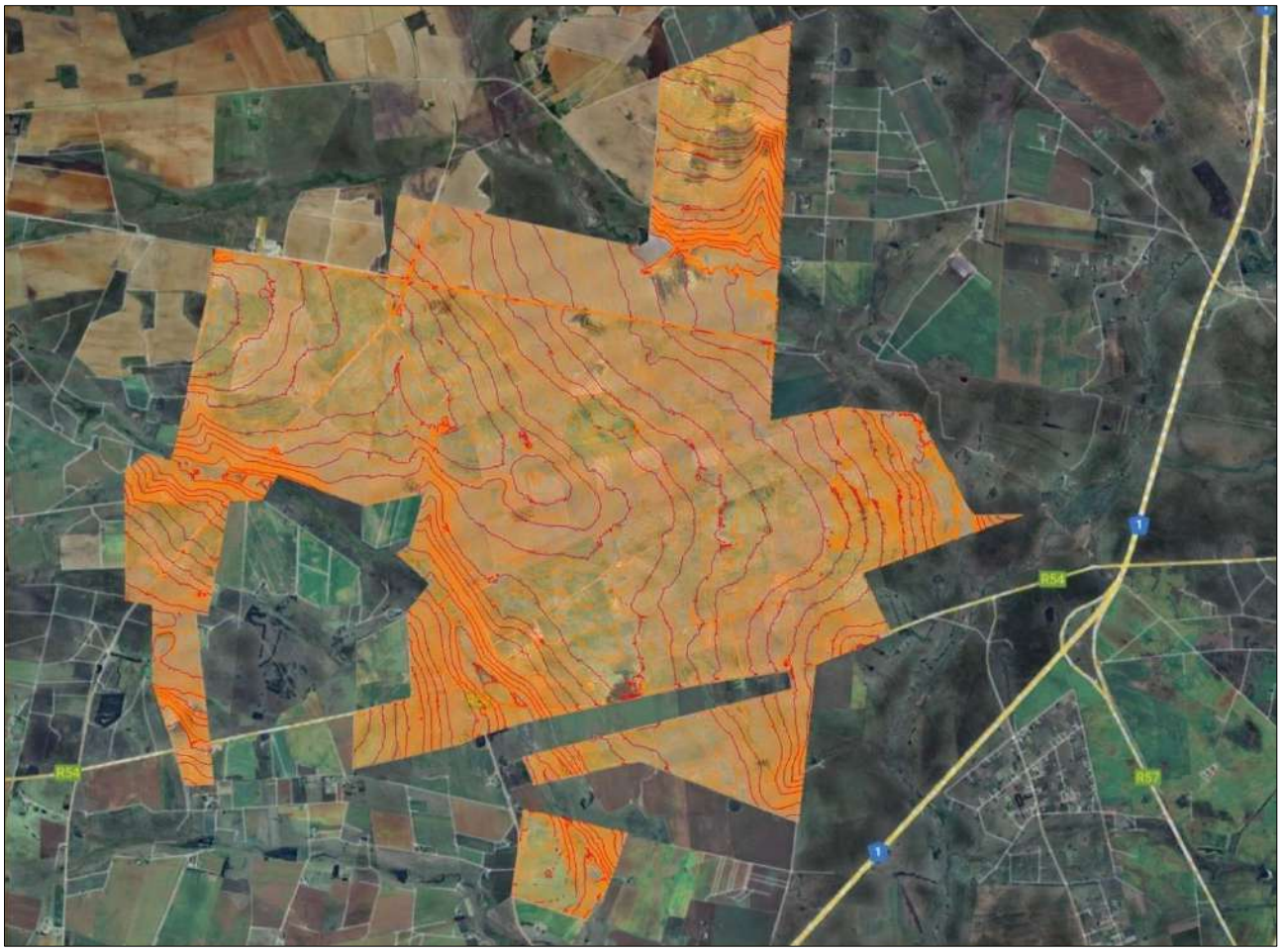

Figure 4: Site Specific 0.5 m and 2 to 4 m LiDAR Contour Data (provided by client)

Numerous minor and major drainage features are present across the site. The Leeuspruit bisects the northern site portion and drains in a south-eastern direction towards the Rietspruit. The majority of the drainage features across the site drain in a southerly to south-easterly direction towards the Klein-Rietspruit. The Klein-Rietspruit drains in an easterly to south-easterly direction towards the Rietspruit. The regional slope direction is towards the south-east in the direction of the Rietspruit, draining in a southerly direction towards the Vaal River.

The drainage on the site will occur in the form of overland flow and shallow, subsurface, flow towards tributaries as shown in **Figure 5**.

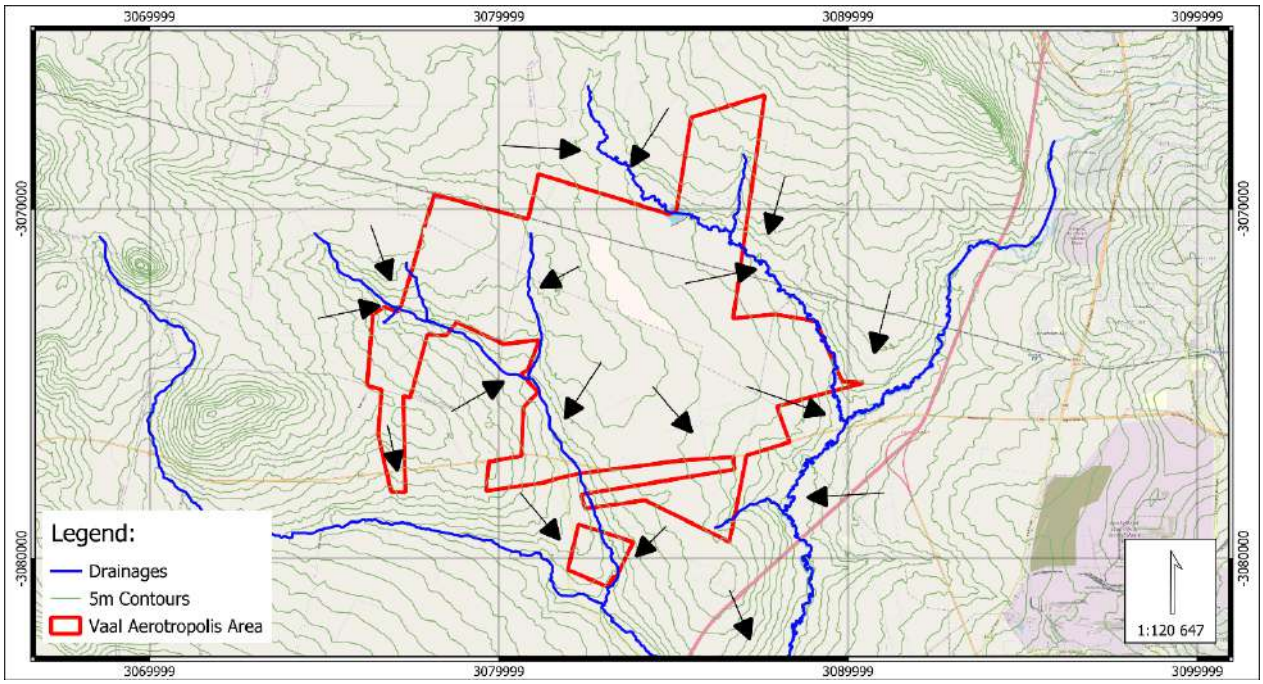

Figure 5 Expected drainage directions across the area of interest

During the site drive-over prominent standing and/or surface seepage water was encountered across the site immediately after heavy and continuous downpours. Wetlands are associated with drainage lines and other low-lying areas and poor drainage conditions were noted on site and in the aerial photography review. The on-site drainage features and on-site conditions encountered during the drive-over survey are depicted in **Photograph 3** to **Photograph 4**.

Photograph 3: Typical drainage feature to the northern portion of the site

Photograph 4: Typical drainage feature to the southern portion of the site

The planners/designers should refer to site-specific survey data and environmental reports for planning/design-level input. Specifically, the presence of wetlands must be identified by a specialist as this is anticipated to be a significant environmental constraint within the study area.

2.4 Climate and Rainfall

As per Climate-data.org (Climate-data.org, 2024), the Vanderbijlpark regional climate is considered "Cwb" according to the Koppen-Geiger climate classification. The average annual temperature is ~17.0 °C with an average annual rainfall of ~776 mm. The temperature is highest on average in January, at around 21.1 °C. The lowest average temperature in the year occurs in July, at around 10.1 °C.

The variation in the precipitation between the driest (July 4 mm) and wettest (December 143 mm) months is 139 mm.

The regional average, minimum and maximum temperatures with the rainfall are depicted in **Chart 1**.

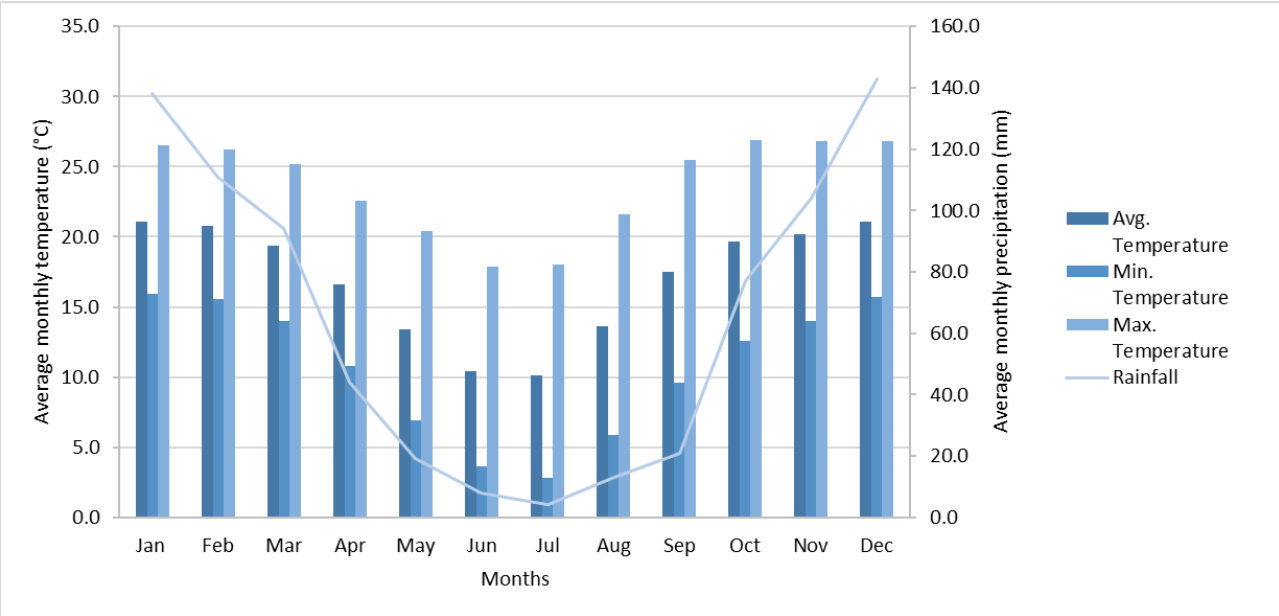

Chart 1: Regional average, minimum and maximum temperatures and precipitation (Climate-data.org, 2024)

The information provided is crude and should be refined by nearby weather stations if deemed critical for design-level input.

2.4.1 Moisture Index – Weinert

This index is mainly for determination of the type of weathering profile that can be expected for a specific region. The index considers rainfall and evaporation with no direct relation to temperatures.

The index is calculated as follow:

$$N = 12 \cdot \frac{Evaporation_{January}}{Mean\ Annual\ Precipitation} \qquad \text{Equation 1}$$

The index ranges propose are:

- N < 2 (Wet region).
- N 2 to 5 (Moderate region).
- N 5 to 10 (Dry region).
- N >10 (Very arid region).

Chemical weathering (alteration) mainly prevails in N<5 regions and physical weathering (disintegration) in regions with N>5.

Climate determines the mode of weathering as well as the rate of weathering, with the effect of climate on the weathering process (i.e., soil formation) determined the climatic N-value defined by Weinert (1964). Illustrated in **Figure 6**. The stratigraphy in the regional region is subjected to both mechanical disintegration and chemical decomposition, where the N-Value is between 2 and 5.

The site Weinert N-value is between 2 and 5, which is considered a “Moderate region”. Relatively deep soil profiles are expected, considering the moisture index and geomorphological setting.

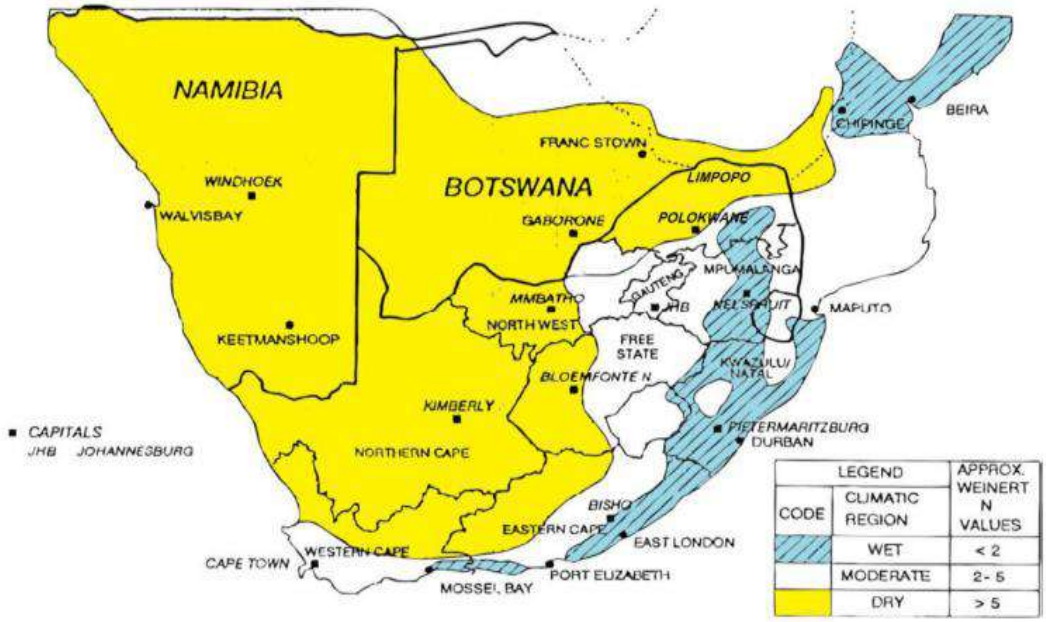

Figure 6 Macro-Climatic Regions of Southern Africa (Adapted from Weinert, 1980)

2.4.2 Moisture Index – Thornthwaite

Thornthwaite's moisture index (Im) is used to classify climatic zones. Im is a function of evapo-transpiration, which is dependent on vegetation and rainfall. Im provides a measure of the moisture surplus or moisture deficit (Hitchhikers Guide to Pavement Engineering, 2019).

Thornthwaite's Moisture Index is calculated as:

$$I_m = \frac{(100 \cdot Max\ Moisture\ Surplus) - (60 \cdot Moisture\ Deficit)}{Potential\ Evapotranspiration} \qquad \text{Equation 2.2}$$

The Im classes are:

Im > 100 (Peri-humid).

Im 20 to 100 (Humid).

Im 0 to 20 (Moist sub-humid).

Im -20 to 0 (Dry sub-humid).

Im -40 to -20 (Semi-arid).

Im <-40 (Arid).

The Thornthwaite's Moisture index Im for this region falls between <-20 to 0, which is considered a "Dry sub-humid" region.

The Im contour map of South Africa is depicted in **Figure 7**.

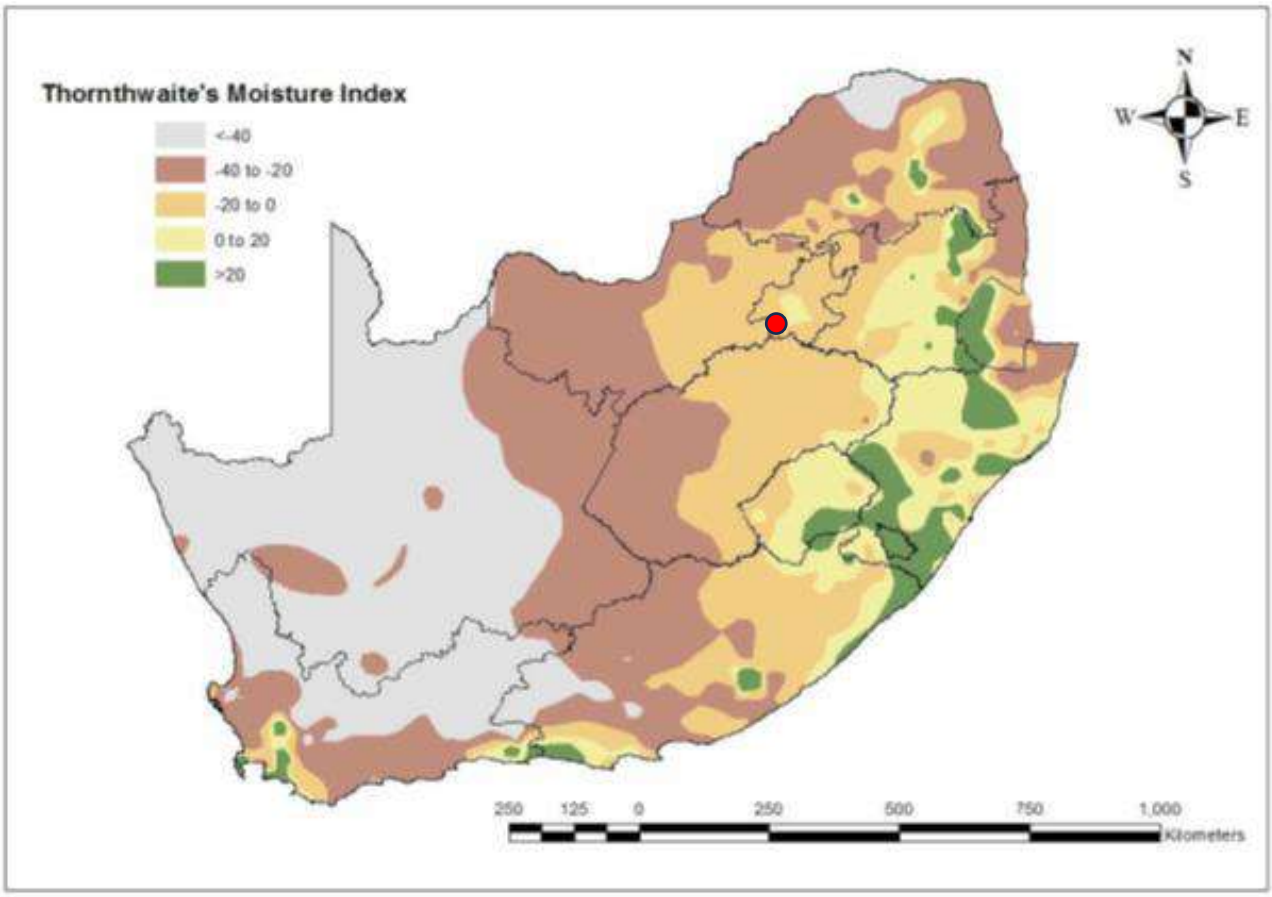

Figure 7: Contour map of Thornthwaite's Moisture Index (Im) (SAPEM Chapter 10, 2014)

3 Regional and Expected Site Specific Geology

3.1 Regional Geology

Based on the 1: 50 000 2627DB Vereeniging and 1:250 000-scale 2626 Wes Rand geological sheets, the site is underlain with soil cover and by rocks of the Pretoria Group, namely shale, quartzite and conglomerate. The description of the geological symbols "Qs", "Qg", "Vm", "Vsi", "Vdi", "Vd" and "Vs" indicated on the 1:250 000 geological sheet are summarized in **Table 1.** A cropped section of the regional geology is depicted in **Figure 8**.

Based on the geological sheets, a prominent undefined W-E striking structure (potentially a diabase dyke) is situated in the southern portion of the site. The region is bestrewed with diabase dykes as indicated by the geological sheet. No other prominent linear structures such as faults or shears are depicted on/or in close proximity of the site. The site is not underlain by potentially soluble rock formations such as dolomite and limestone. The site is considered non-dolomitic.

Table 1: Regional geology symbol summary

Symbol	Age	Sedimentary and Volcanic Rocks			Rock Type
		Supergroup	Group	Formation/ Subgroup	
Qs	Quaternary				Colluvium Alluvium (gravel sand; greyish to blackish, clayey soil)
Qg					Transported gravel in a sandy matrix
V-di	-	N/A			Diabase (intrusive rock)
Vm	Vaalian	Transvaal	Pretoria	Magalies	Quartzite
Vsi				Silverton	Slate, shale, hornfels, graphitic with andalusite, quartzite
Vd				Daspoort	Quartzites and shales, locally ferruginous
Vs				Strubenkop	Light brown shale with siltstone, sandstone and quartzite

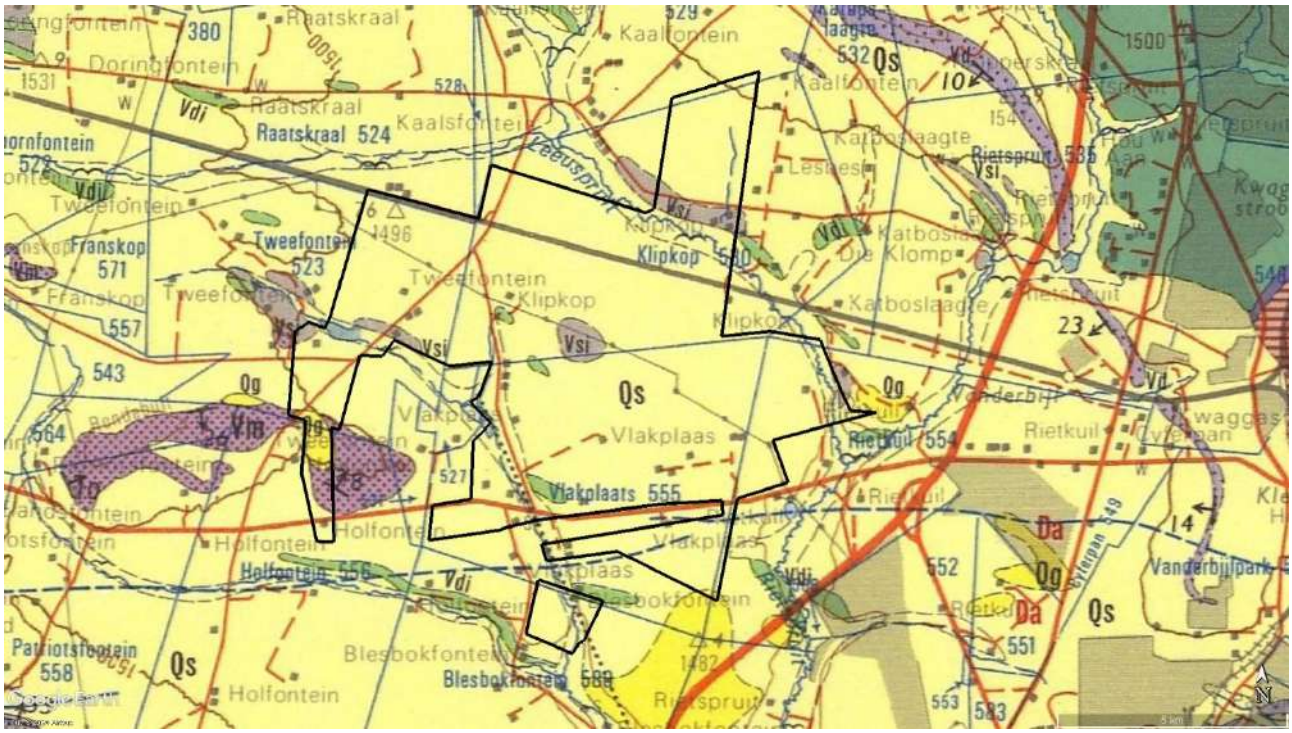

Figure 8: Regional Geological Sheets (Cropped 1:250 000-scale 2626 Wes Rand)

3.2 Site Specific Geology

Based on limited exposed cuts, borrow pits and readily available information, the region is generally covered with an upper topsoil or localised fill material towards existing infrastructure.

The fill or topsoil horizons are generally underlain by a colluvium or alluvium transported horizons with the alluvium materials situated towards the low-lying drainage areas. A pebble marker horizon or pedogenic formation underlies the aforementioned transported horizons while at the same time overlying either residual shale, residual quartzite, or localised residual diabase. The residual horizons are expected to generally transition to their respective rock type's weathered state which may be gradual or sudden transitions.

Pedogenic formations (well developed nodular to honeycomb to hardpan ferricrete) were recorded in shallow open cuts across the area of interest.

The depth to bedrock is expected to vary significantly, generally somewhere in the region of between roughly 1.00 to 3.00 m below ground level with undulating conditions and localised areas of very shallow hard rock to the western portion of the site.

No outcrops were encountered during the drive-over survey; however, surficial quartzite and diabase rock boulders were encountered towards the western portions of the area of interest. The intrusive diabase within this geological setting is well known for its spheroidal weathering resulting in small to large sized corestones.

Based on aerial imagery the quartzites of the Magalies Formation is locally seemingly outcropping in the western limb of the area of interest.

The different materials encountered during the drive-over survey are discussed in the following sections.

Topsoil generally has a loose to medium dense or locally, a soft to firm soil consistency. The soil structure is generally pinholed to voided and locally fissured. The soil texture is mainly gravelly clayey silty SAND to locally silty sandy CLAY in the drainage features and low-lying areas.

Colluvium was generally encountered as yellowish brown to brown, very loose to loose and occasionally medium dense, pinholed to voided, silty SAND with trace to minor amounts of clay and sub-rounded gravel of mixed origin. The typical colluvium material encountered on site is depicted is depicted in **Photograph 5**.

Photograph 5: Typical colluvium material encountered

Alluvium was typically encountered and restricted towards the drainage features throughout the site. The material was encountered as grey to dark brown, very soft to soft, intact, silty sandy CLAY to silty clayey SAND. The typical alluvial material encountered on site is depicted in **Photograph 6**.

Photograph 6: Typical alluvium material encountered on site

Pebble marker horizon has a loose to medium dense soil consistency. The soil structure is generally open structured. The soil texture is mainly (clayey) silty sandy GRAVEL to (clayey) silty gravelly SAND, with abundant amounts of sub-rounded gravel to cobble sized fragments of mixed origin. Weakly to strongly cemented pedogenic formations (ferricrete) were encountered in the horizon. The typical pebble marker material encountered on site is depicted in **Photograph 7**.

Photograph 7: Typical pebble marker material

Weakly to strongly cemented **pedogenic formations** (nodular to honeycomb or hardpan ferricrete) were encountered in cuts and at surface across the site.

The ferricrete horizons have a medium dense to very dense soil consistency. The horizons typically consist of moderately to very strongly cemented concretions with a silty sand matrix. Typical pedogenic formation material encountered on site is depicted in **Photograph 8** and **Photograph 9.**

Photograph 8: Typical pedogenic formations (nodular to honeycomb ferricrete)

Photograph 9: Surficial hardpan ferricrete to the southern portion of the site

Residual shale was encountered as reddish to orange brown, expected to be soft to stiff, shattered, sandy clayey silty to gravelly clayey silty sand. The residual shale is cohesive in nature.

Residual diabase is cohesive in nature and was generally encountered as red-brown, speckled black to orange, firm to stiff, fissured to slightly shattered, gravely silty clayey sand. Prominent diabase corestones were encountered at a borrow area to the southern portion of the site. The typical residual diabase material and corestones encountered on site at the above mentioned borrow area are depicted in **Photograph 10** to **Photograph 12.**

Photograph 10: Typical residual diabase material

Photograph 11: Typical residual diabase material within borrow pit

Photograph 12: Typical diabase corestones within a borrow pit towards the southern portion of the site

Weathered quartzite rock seemingly of the Magalies Formation was encountered in an existing borrow pit at shallow depth to west of the western boundary of the site. The weathered quartzite was encountered as light pinkish brown to grey, streaked orange and black, highly to moderately weathered, fine to medium grained, massive, highly to moderately fractured, soft rock quartzite. The typical weathered quartzite encountered at a borrow pit to the west of the site is depicted in **Photograph 13** to **Photograph 14.**

Photograph 13: Typical weathered quartzite seemingly of the Magalies Formation

Photograph 14: Weathered quartzite borrow pit to the west of the western site boundary

Weathered shale rock seemingly of the Silverton Formation was encountered in a road cut to the centre portion of the site. The weathered shale was encountered as light brown to yellowish brown, speckled orange and grey, highly weathered, fine grained, laminated, highly fractured, very soft rock shale. The typical weathered shale encountered on site is depicted in **Photograph 15.**

Photograph 15: Typical weathered shale seemingly of the Silverton Formation

3.3 Seismicity

Seismic hazard zones applicable to South Africa are depicted in **Figure 9**. The zones are determined from the seismic hazard map which presents the peak ground acceleration with a 10 % probability of being exceeded in a 50-year period. It included both natural and mining-induced seismicity (SANS10160-4, 2017).

The following zones are considered:

- Zone I: Natural seismic activity
- Zone II: Regions of mining-induced and natural seismic activity

The site is situated within Zone II; therefore, seismicity is a concern for this site. The structural engineer should determine if design precautionary measures are required, as guided by SANS10160-4.

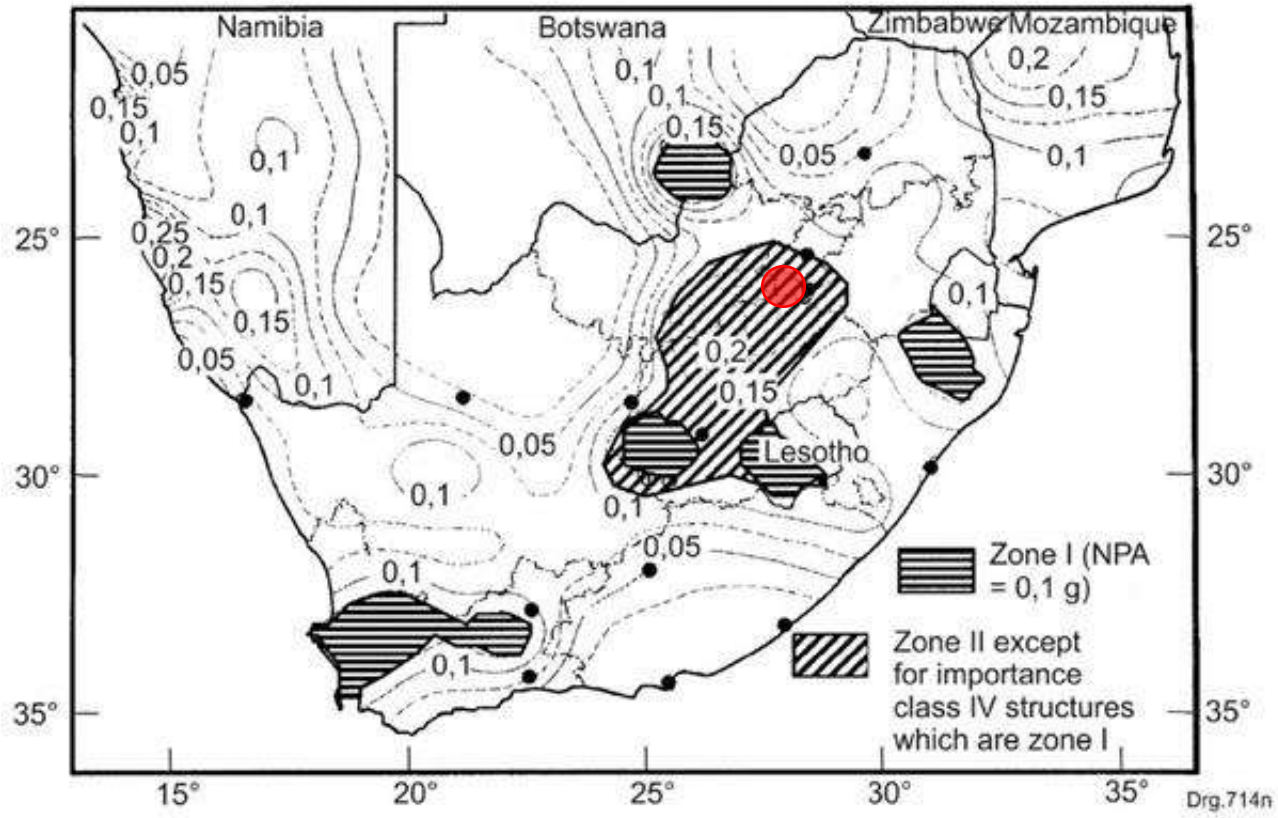

Figure 9: Seismic Hazard Map of South Africa

4 Geotechnical Constraints

The site evaluation and expected geotechnical constraints are based on data retrieved from literature, reports in the public domain, satellite imagery and the site drive-over survey conducted during the writing of this report. The exact extents of the surface features and subsurface conditions can only be confirmed with a detailed on-site investigation.

The impact of the geotechnical constraints relevant to urban development may be evaluated by the method outlined by SANS634 (2012). Based on the anticipated underlying geology, the anticipated geotechnical constraints are as summarised in **Table 2.**

Table 2: Relevant geotechnical classification for urban development classes (SANS634, 2012)

Constraint		Most Favourable (1)	Intermediate (2)	Least Favourable (3)
A	**Collapsible soil**	Any collapsible horizon or consecutive horizons totalling a depth of less than 750 mm in thickness[a]	Any collapsible horizon or consecutive horizons with a depth of more than 750 mm in thickness	A least favourable situation for this constraint does not occur
B	**Seepage**	Permanent or perched water table more than 1,5 m below ground below	Permanent or perched water table less than 1,5 m ground surface	Swamps and marshes
C	**Active soil**	Low soil-heave potential anticipated[a]	Moderate soil-heave potential anticipated	High soil-heave potential anticipated
D	**Compressible soil**	Low soil compressibility anticipated[a]	Moderate soil compressibility anticipated	High soil compressibility anticipated
E	**Erodibility of soil**	Low	Intermediate	High
F	**Difficulty of excavation to 1.50 m depth**	Scattered or occasional boulders less than 10 % of the total volume[a]	Rock or hardpan pedocretes between 10 % and 40 % of the total volume	Rock or hardpan pedocretes more than 40 % of the total volume
G	**Undermined ground**	Undermining at a depth greater than 200 m below surface (except where total extraction mining has not occurred)	Old undermined areas to a depth of 200 m below surface where stope closure has ceased	Mining within less than 200 m of surface or where total extraction mining has taken place
H	**Instability in areas of soluble rock**	Possibly stable. Areas of dolomite overlain by Karoo rocks or intruded by sills. Areas of Black Reef rocks. Anticipated inherent hazard class 1 (see SANS 1936-2)	Potentially characterized by instability. Anticipated inherent classes 2 to 5	Known sinkholes and dolines. Anticipated inherent hazard classes 6 to 8 (see SANS 1936-2)
I	**Steep slopes**	Between 2° and 6° (all regions)	Slopes between 6° and 18° and less than 2° (Natal and Western Cape) Slopes between 6° and 12°and less than 2° (all other regions)	More than 18° (Natal and Western Cape) More than 12° (all other regions)
J	**Areas of unstable natural slopes**	Low risk	Intermediate risk	High risk (especially in areas subject to seismic activity)
K	**Areas subject to seismic activity**	10 % probability of an event less than 100 cm/s² within 50 years	Mining-induced seismic activity more than 100 cm/s²	Natural seismic activity more than 100 cm/s²
L	**Areas subject to flooding**	A "most favourable" situation for this constraint does not occur	Areas adjacent to a known drainage channel or floodplain with slope less than 1 %	Areas within a known drainage channel or floodplain

Note 1: Areas should be designated by the numeral associated with the most appropriate descriptor in columns 3 to 5 followed by the letter associated with the constraint. For example, an area designated as Zone 2BF would be an intermediate class with anticipated seepage and excavation problems while an area designated as Zone 3B would be least favourable and not recommended for development due to surface water inundation.

Note 2: More detailed information on undermined land can be obtained from Stacey, T.R. and Bakker, D. The erection or construction of buildings and other structures on undermined ground. NOTE 3 Undermining assessments should be carried out by persons with expert knowledge of such conditions.

[a] *These areas are designated as 1A, 1C, 1D, or 1F where localized occurrences of the constraint might arise.*

The following major constraints according to the list above above were identified during this study::

- Open structured topsoil, colluvium and residuum horizons with a collapse potential in the in-situ state (uncompacted state);
- Expected shallow seasonal seepage water conditions and/or saturated soil profiles (during and immediately after heavy and/or continuous downpours) based on the presence of the prominent pedogenic formation present in the upper soil horizons;
- Upper transported (alluvium) and lower residuum (diabase and potentially Silverton shales) soils with an expected low to moderate expansive potential;
- Open soil structure with a medium percentage of fines (silt and clay) within the upper transported and lower residuum (shales and diabase) that is expected to result in a medium compressibility potential in the uncompacted and compacted state;
- Upper soils with an intermediate to high susceptibility to erosion if exposed and subject to concentrated water flow due to the sand content within the upper topsoil;
- Localised well cemented ferricrete, shallow bedrock and/or large size boulders or corestones that may result in severe excavation difficulty and possible use of pneumatic equipment and/or blasting for service installations and/or cut-to-fill-to-level preparation;
- Situated within a mining-induced and natural seismic activity region; and
- Areas within and adjacent to a known drainage channel or floodplain with slope less than 1 %.

Other constraints identified for this site include:

- Site slope that is expected to require minor cut-to-fill-to-level platform preparation for small to large structures and potential major cut-to-fill-to-level preparation for the runway;
- Expected localised large size boulders or corestones that may result in composite founding conditions where foundations span incompressible competent material and compressible soil;
- Soils with an expected unfavourable aggressiveness rating towards ferrous metals/services;
- Presence of localised trees with root systems and historic soak away/French drain systems that may affect the soils negatively if removed that will require rehabilitation or foundation modifications;
- Foundations and/or underground services that may result in composite founding conditions; and
- Localised areas of surficial uncontrolled fill/rubble that are expected to result in composite founding conditions that will require minor site preparation in these affected areas.

The site is divided into simplified expected FACET areas that are expected to have similar geotechnical conditions and constraints. The expected FACET areas are shown in **Figure 10.** The expected conditions for each zone are summarised in **Table 3**.

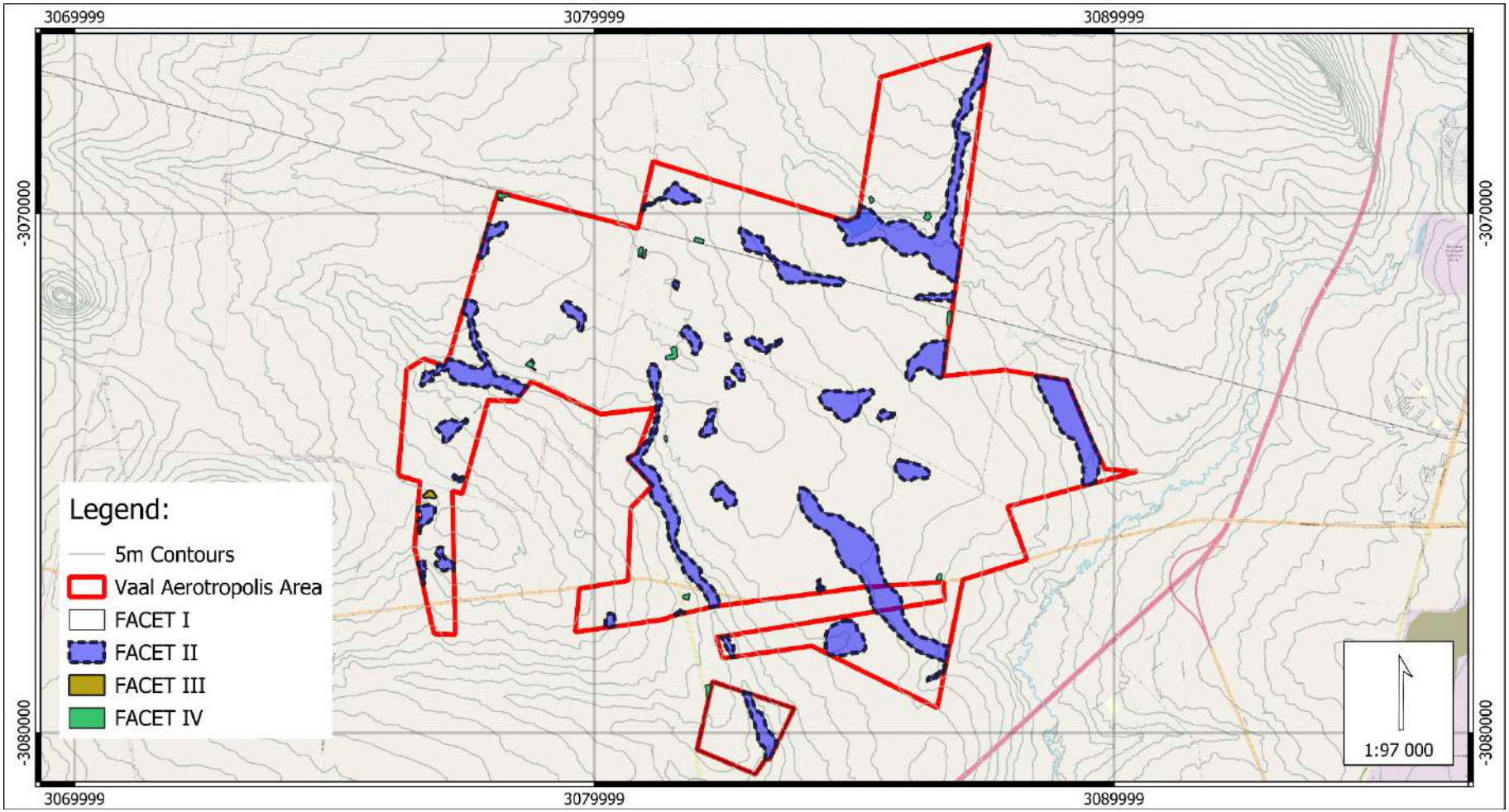

Figure 10: Simplified FACET areas of similar geotechnical constraints

Table 3: Expected major geotechnical constraints for the FACET areas

FACET	Major Geotechnical Constraints
I	• Expected compressible and potentially collapsible soils • Expected localised potentially expansive soils • Expected localised well cemented pedogenic formations, shallow bedrock and/or large size boulders or corestones that may cause severe excavation difficulty • Shallow seasonal groundwater seepage and localised ponding water that will necessitate mitigation such as subsoil drainage and pioneer layer construction • Erodibility of upper soils • Areas situated adjacent to known drainage channel or floodplain with slope less than 1 % • Localised fill material with existing structures and foundations
II	• Expected prominent severe waterlogged to shallow water seepage conditions • Expected compressible soils • Expected potentially expansive soils • Expected shallow well cemented pedogenic formations that may cause severe excavation difficulty
III	• Excavation difficulties on localised outcropping to shallow bedrock • Expected thin potentially collapsible soils • Erodibility of upper soils • Shallow seasonal seepage and ponding water
IV	• Areas previously borrowed with ditches and trenches that may need to be rehabilitated • Water ponding in holes and depressions • Uncontrolled fill of varying composition • Erosion of induced steep angles of the borrow sidewalls

5 Material Utilisation

Based on the information retrieved during the desktop study and local knowledge of the area, the preferred material to target for construction materials is the ferricrete and quartzite. The information herein is sourced from regional reports on similar materials.

i. Ferricrete

Ferricrete is usable as a construction aggregate when its well-developed and well-cemented. Nodular, honeycomb and hardpan ferricrete can provide G5 to G7 when the material is moderately to strongly cemented. Weakly to very weakly cemented ferricrete will breakdown into fines when wetted and placed under a dynamic load, such as compaction from a vibrating roller, but can provide a G8 to G9 material. The typical constraint of ferricrete is the variability in thickness and degree of cementation.

ii. Quartzite

The quartzite materials are expected to be limited on site and to the far western portion of the area of interest. Quartzite of the Magalies Formation is envisioned to meet strength and durability requirements for G1 to G5 in terms of the COTO materials classification system. However, intrusive investigations and laboratory testing are required to prove the quantities and quality where the lithology is considered for use in the upper base and subbase layers. This will also require the development of a quarry to obtain the hard rock, slightly weathered rock at depth.

The shales from the Silverton Formation are expected to classify as G6 to >G9 material in the unweathered to completely weathered state.

The transported pebble marker zone is expected to classify as A-2, SC/SM and G6 to G8. The pebble marker zone may be used for road or mattress construction but variability in thickness can make it uneconomical.

The diabase rock in the region generally weathers to a silty clay with minor amounts of sand and gravel. The upper and lower diabase residuum materials are expected to generally classify as "CL to ML", "SC" to "GC" according to the Unified Soil Classification System. The residual diabase is expected to classify as G8 to >G9 material and is not recommended for road or mattress construction.

6 Conclusions

The following can be concluded:

- The site is not underlain by potential soluble dolomitic formations and a dolomite stability investigation is not required.
- No potential economic deposits are indicated on site and expected to affect the developability of this site.
- No undermining is present that may affect the developability of the site as from a subsurface instability point of view.
- Soils with low bearing capacity, collapsible fabric, compressibility and expansiveness potential could be encountered.
- Localised shallow rock and/or corestones are expected across the site, which may cause excavation difficulties.
- Prominent shallow strongly cemented pedogenic formations such as honeycomb to hardpan ferricrete are expected across the site and are an indicator of the presence of shallow seasonal seepage water conditions.
- Severe seasonal standing and/or seepage water are expected during and immediately after heavy and/or continuous downpours, as evident from the vegetational cover across the site and towards lower-lying areas.
- The study did not identify any geotechnical fatal flaws that would preclude the proposed development. Notwithstanding, there will be geotechnical constraints, as mentioned above, which needs to be considered during the development planning.
- The constraints listed are the major expected geotechnical constraints that may affect the proposed development and should only be used for guideline purposes. The constraints should however be identified, confirmed and zoned in the detailed intrusive investigation to come as per standard practice.
- This desktop study is for informational and basic planning purposes only and outlines the major expected geotechnical constraints. The report is not deemed suitable for detailed design purposes.

7 Way Forward

The following will be recommended regarding the way forward:

- Wetland delineation must be undertaken by a specialist to identify and delineate wetlands within the study area. This assessment may render portions of the site undevelopable.
- The potential flood lines (1:100 and 1:50 year) need to be confirmed/investigated and incorporated in the proposed development layout and preliminary assigned geotechnical facets. The flood assessment may render portions of the site undevelopable.

- Where non-residential development is considered, the investigations to follow should be guided as outlined in SAICE 2010 code of practice as for Feasibility to Design level engineering geotechnical investigations.
- Conduct a more detailed preliminary shallow soil or Phase 1 detailed shallow soil investigation as guided by the national standards (SANS634, 2012) for residential development areas.

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PeraGage
SPECIALIST GEOCONSULTANTS

Report on the Preliminary Geotechnical Investigation for

Vaal Aerotropolis Shallow Soil Assessment

Gauteng, South Africa

Report no.: 0827-RP-Rev0(GT24275G-01)

September 2024

www.peragage.com

Gauteng: Block C, Irene Link, Cnr N1 Highway and Botha Avenue, Irene, Centurion
Eastern Cape: Harbour View Building, 1st Floor, Oakworth Road, Gqeberha
Western Cape: The Colosseum, F3 1st Floor, Century Way, Cape Town
Kwa-Zulu Natal: 2 Ncondo Place, Umhlanga Ridge, Durban

PO Box 71572, Bryanston, 2021 South Africa
+27 (0)12 001 0573 | **www.peragage.com**

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Project Team
Kobus Roux *PrSciNat BSc(Hons) Geology*
JP Pretorius *BSc(Hons) Geology*

Report by	Reviewed by
JP Pretorius Engineering Geologist BSc(Hons) Eng. Geology	**Kobus Roux** PriSciNat Senior Engineering Geologist BSc(Hons) Eng. Geology

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1. Introduction and Terms of Reference

PeraGage (Pty) Ltd (PeraGage) has been appointed by WSP Africa to undertake a preliminary level geotechnical investigation for shallow soil assessment for the proposed Vaal Aerotropolis stretching over an approximate area of 6 769 hectares in the Sedibeng District, Gauteng Province, South Africa.

The aim of the preliminary investigation is to identify and categorise terrain types, indicate appropriate land uses and comment on potential source for construction materials. The preliminary shallow soil investigation is conducted in order to establish if a parcel of land is suitable for the proposed development and/or application purposes and will form part of the EIA process.

The preliminary investigation is generally supplemented by a site walkover survey and examination of existing profiles in the area with limited trial pit excavation with soil profile descriptions and excludes any laboratory testing.

1.1 Objectives and Methodology of the Assessment

The shallow soil investigation is guided by various guidelines including the SAICE Site Investigation Code of Practice.

The main objectives of the preliminary geotechnical investigation are:

- Gathering of existing and readily accessible information in the area of interest;
- Identify and categorize terrain types;
- Establish if a parcel of land is suitable for the proposed development;
- Indicate appropriate land use; and
- Comment on potential sources of construction materials.

The following methodology was adopted for the aim of the assessment:

- Desk study of readily available information, reports and maps in the region;
- Limited trial pit excavations;
- Soil profiling by an engineering geologist;
- Soil profile photography; and
- Evaluation and reporting on the geotechnical conditions encountered.

1.2 Proposed Development

The Vaal Aerotropolis development will be a combination of various infrastructure, but not limited to:

I. Airport
II. Railway
III. Agricultural hub; and
IV. Commercial and residential infrastructure.

The proposed conceptual layout plan is illustrated in **Figure 1-1**.

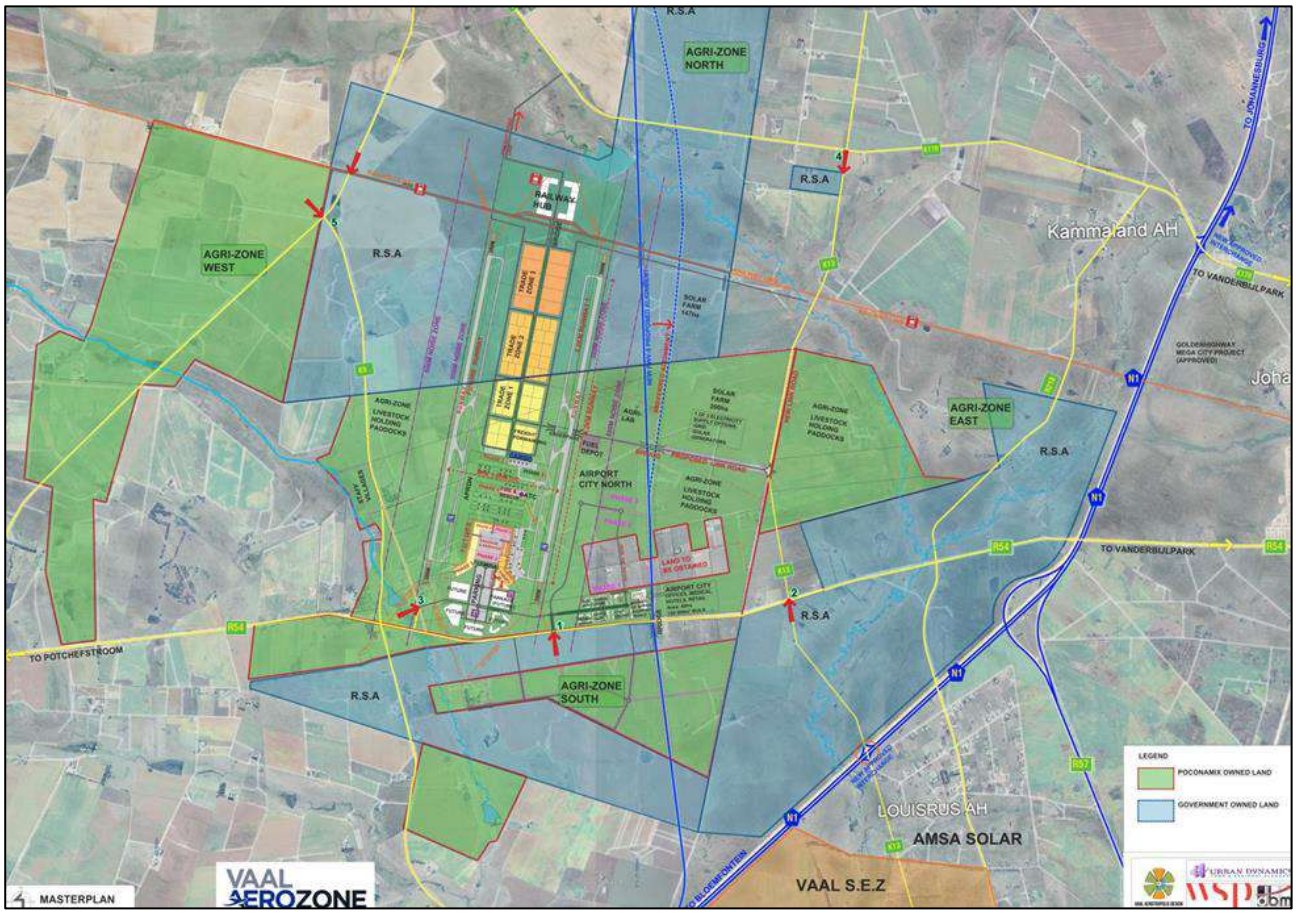

Figure 1-1: Proposed conceptual layout plan of the Vaal Aerotropolis development

1.3 Informational Sources

The available information considered during this study comprised:

- 1:250 000 scale Geological Map 2626 East Rand;
- 1:50 000 scale Geological Map 2627DB;
- 1:50 000 scale Geotechnical Map 2627DB;
- 1:50 000 scale Topographical Sheets 2627DA and 2627DB;
- Provided locality map;
- Google Earth satellite imagery;
- LiDAR imagery provided by the client;
- Climate-date.org database; and
- Various literature as referenced.

1.4 Code of Practice

The services performed by PeraGage are conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the geotechnical profession practicing under similar conditions in the locality of the project. The study is based on the requirements of a Preliminary Investigation in terms of the SAICE Geotechnical Investigation (2010) Code of Practice for Site Investigations.

1.5 Limitations of the Investigation

This document provides a basic overview of the site's conditions based solely on available desktop-level information and relevant databases. The investigation was conducted with the objective of identifying potential geotechnical constraints that could impact the site. However, it is important to note that this is a preliminary assessment, and PeraGage recommends a detailed site investigation, including physical probing and testing, to further quantify the geotechnical characteristics of the site in the future, should the area be deemed suitable for such activities.

Geological and geotechnical conditions are rarely uniform across a site. Localised variations in subsurface conditions may exist that were not identified in this report. Therefore, the engineering recommendations presented are preliminary in nature and must be confirmed through detailed site investigations and testing before any definitive conclusions or designs are finalised.

The contents of this report are valid as of the date of its preparation and specific to the proposed development. Over time, site conditions may change due to natural processes or human activities and modifications may be made to the proposed development. In the event of a significant time lapse between the submission of this report and the commencement of any work, or if changes occur on or adjacent to the site, PeraGage advises that the report be reviewed to ensure the continued relevance and applicability of the conclusions and recommendations in light of the new conditions.

While every effort has been made during this preliminary geotechnical investigation to identify different geological materials, areas with perched water tables, hydrogeological conditions, and areas of poor drainage, it is not possible to guarantee that isolated zones with significantly different conditions have not been overlooked. As such, this investigation aims to highlight the most significant geotechnical concerns that may impact the proposed development, providing early warning to the client.

2. Site Characteristics

2.1 Locality and Site Description

The proposed development is located on numerous portions of agricultural land west of Sebokeng and to the north-west of Vanderbijlpark, in the Sedibeng and West Rand District Municipalities. The area of interest is situated approximately 1 to 3 km to the north-west and west of the N1 highway with the R54 bisecting the southern portion of the site. The site is trafficable and accessible from the R54 Road and D1017 Road.

The area of interest has a surface area of approximately 6 769 ha. The area of interest is depicted in **Figure 2-1**.

The approximate centre coordinates of the area of interest are (Decimal Degrees):

Latitude: -26.603744°

Longitude: 27.696059°

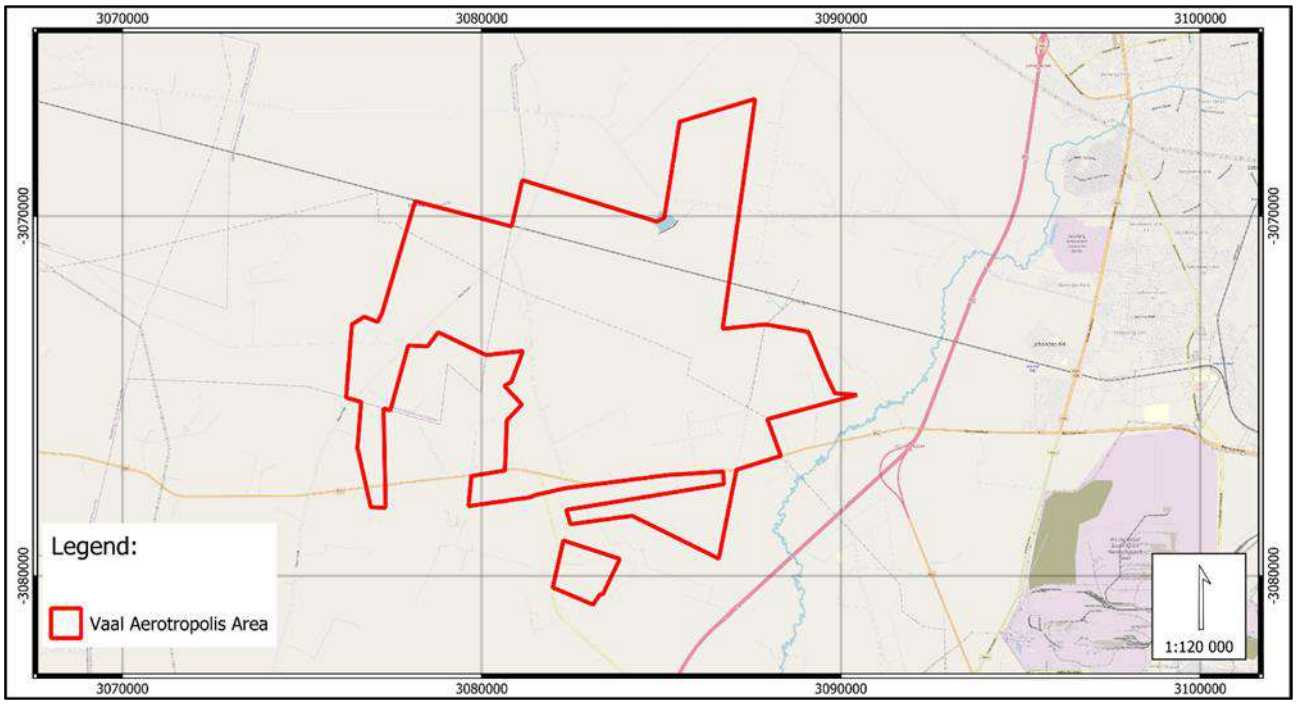

Figure 2-1: Site locality

The majority of the site is generally undeveloped and covered with natural grass, agricultural crops and localised small to large sized trees and shrubs.

Based on the drive-over survey and historic aerial imagery, localised single to double storey farm dwellings with outbuildings are scattered across the area of interest. Areas of domestic waste, organic material, old foundations, French/soak away systems and construction rubble can be expected at, but not limited to, the existing farm dwellings and outbuildings.

Small termite mounds and animal burrows are present across the area of interest.

Numerous shallow small diggings or borrow areas are situated next to the road infrastructure across the area of interest. Pedogenic materials such as ferricrete was seemingly borrowed for road construction material.

Grave sites have also been encountered during the drive-over survey.

The presence of existing bulk services is unknown and falls outside the scope of the desktop study. Existing and planned services should be confirmed in the services reports. The planners should refer to the services report for planning purposes.

2.2 Current Land Use

Currently the area of interest is generally used for agricultural purposes. The proposed areas have not undergone any formal township development.

2.3 Topography and Drainage

The area of interest is situated between approximately 1 507 and 1 454 mamsl (meters above mean sea level). The current slope angles/directions vary across the site due to the nature of the geomorphological setting. These are low relief with slope forms varying between concave and convex shapes.

The general site-specific slope directions are towards the drainage features situated across the site. The slope angles across the site, have gentle slope angles with average gradients of <2 degrees. The unchanneled drainage features and valley bottom traverses have relative flat-lying to slightly steeper slopes with gradients of <6 degrees.

A cropped section of the topography sheet is depicted in **Figure 2-2**. The provided site-specific 0.5 and 2 m LiDAR contour data is depicted in **Figure 2-3**.

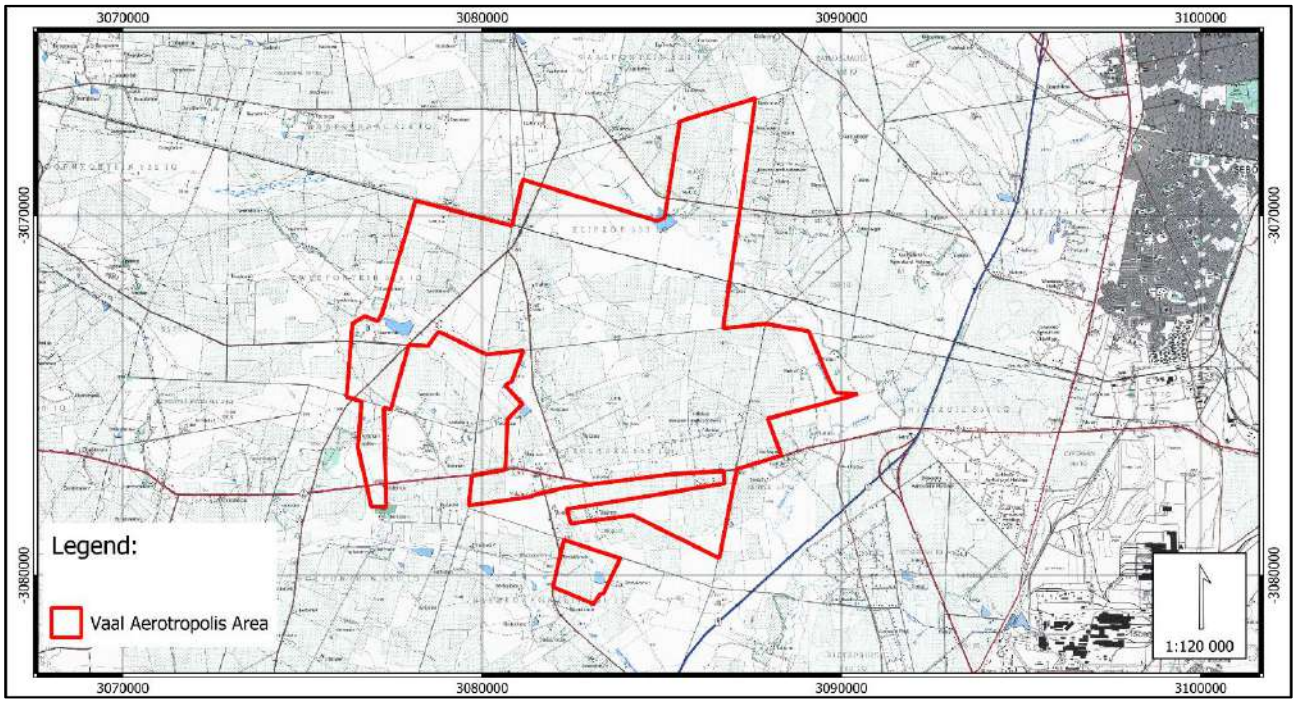

Figure 2-2: Regional topography sheet (Cropped 1:50 000 scale 2627DA and 2627DB)

Figure 2-3: Site specific 0.50 m and 2 m LiDAR contours data (provided by client)

Numerous minor and major drainage features are present across the site. The Leeuspruit bisects the northern site portion and drains in a south-eastern direction towards the Rietspruit. The majority of the drainage features across the site drain in a southerly to south-easterly direction towards the Klein-Rietspruit. The Klein-Rietspruit drains in an easterly to south-easterly direction towards the Rietspruit. The regional slope direction is towards the south-east in the direction of the Rietspruit, draining in a southerly direction towards the Vaal River.

The drainage on site will occur in the form of overland flow and shallow, subsurface, flow towards tributaries as shown in **Figure 2-4**. The very gentle sloping portions of the site will be subjected to elevated degrees of surface water infiltration into the underlying soils, rather than rapid surface water flow, accentuating surface water ponding and fluctuating moisture conditions after prolonged precipitation events. Should excessive infiltration take place across this area, it is predicted that elevated volumes of shallow ground water throughflow may occur across the investigated site.

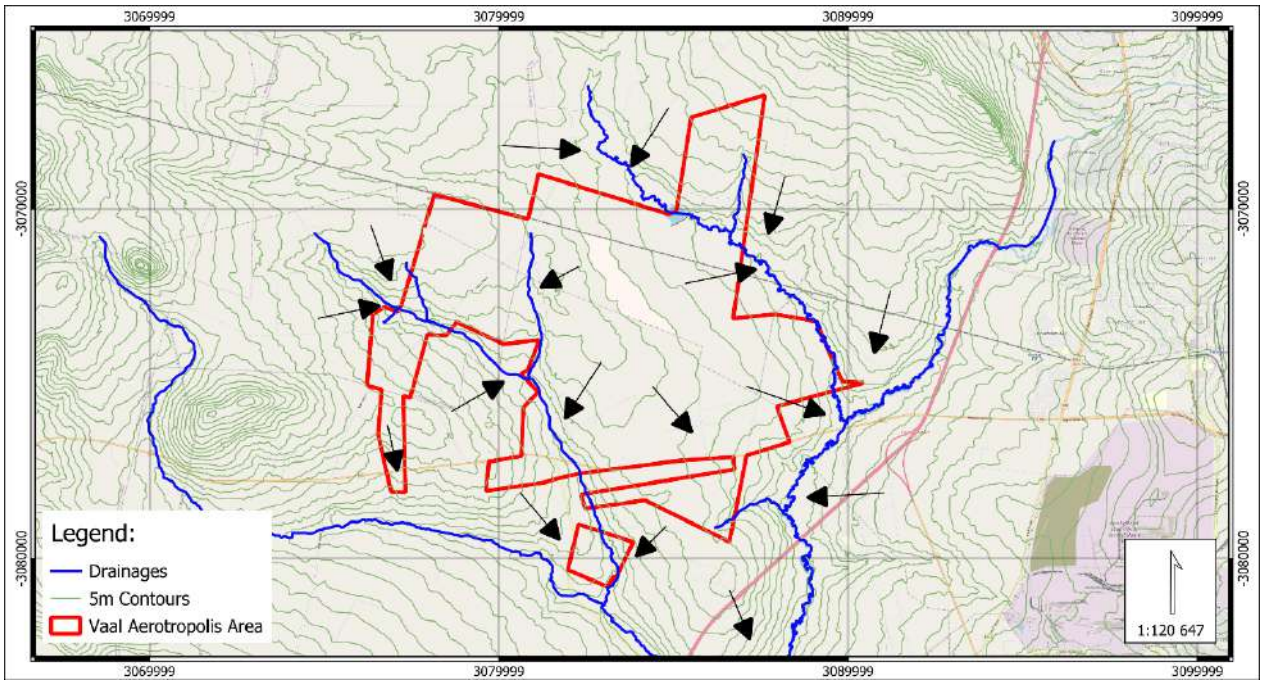

Figure 2-4: Expected drainage directions across the area of interest

Wetlands are associated with drainage lines and other low-lying areas and poor drainage conditions were noted on site and from the aerial photography review. The presence of wetlands must be identified by a specialist as this is anticipated to be a significant environmental constraint within the investigated area.

2.4 Climate and Rainfall

As per Climate-data.org (Climate-data.org, 2024), the Vanderbijlpark regional climate is considered "Cwb" according to the Koppen-Geiger climate classification. The average annual temperature is ~17.0 °C with an average annual rainfall of ~776 mm. The temperature is highest on average in January, at around 21.1 °C. The lowest average temperature in the year occurs in July, at around 10.1 °C.

The variation in the precipitation between the driest (July 4 mm) and wettest (December 143 mm) months is 139 mm.

Chemical weathering (alteration) mainly prevails in N<5 regions and physical weathering (disintegration) in regions with N>5.

Climate determines the mode of weathering as well as the rate of weathering, with the effect of climate on the weathering process (i.e., soil formation) determined the climatic N-value defined by Weinert (1964). Illustrated in **Figure 2-5**. The stratigraphy in the regional region is subjected to both mechanical disintegration and chemical decomposition, where the N-Value is between 2 and 5

The site Weinert N-value is between 2 and 5, which is considered a "Moderate region". Relatively deep soil profiles are expected, considering the moisture index and geomorphological setting.

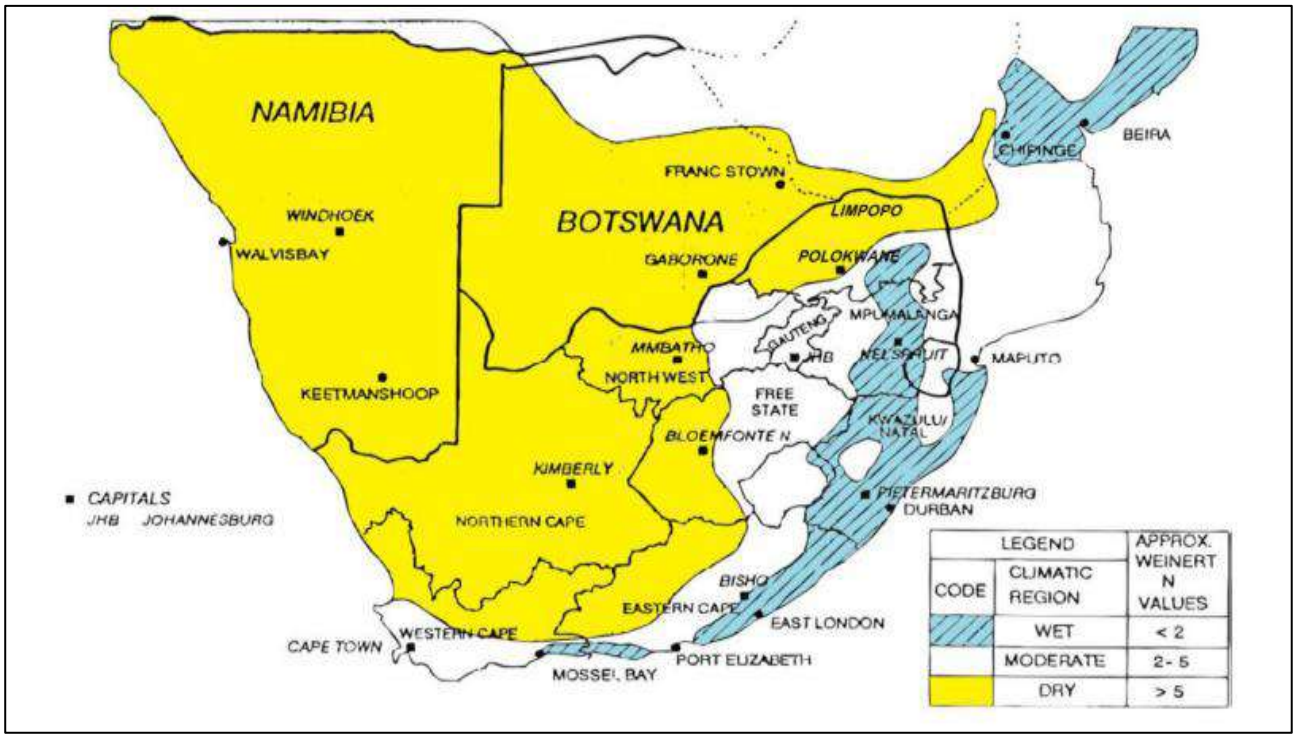

Figure 2-5: Macro-Climatic Regions of Southern Africa (Adapted from Weinert, 1980)

3. Regional and Site Specific Geology

3.1 Regional Geology

Based on the 1: 50 000 2627DB Vereeniging and 1:250 000-scale 2626 Wes Rand geological sheets, the site is underlain with soil cover and by rocks of the Pretoria Group, namely shale, quartzite and conglomerate. The description of the geological symbols "Qs", "Qg", "Vm", "Vsi", "Vdi", "Vd" and "Vs" indicated on the 1:250 000 geological sheet are summarized in **Table 3-1**. A cropped section of the regional geology is depicted in **Figure 3-1**.

Based on the geological sheets, a prominent undefined W-E striking structure (potentially a diabase dyke) is situated in the southern portion of the site. The region is bestrewed with diabase dykes as indicated by the geological sheet. No other prominent linear structures such as faults or shears are depicted on/or in close proximity of the site.

According to the geological maps and accompanied explanation; no specific mineral deposits are present on the site. Information received from the Council for Geosciences and the available regional geological sheets indicate that the site is not characterised by soluble rocks such as dolomite or limestone. Therefore, the study area does not reflect any risk for the formation of sinkholes or subsidence's caused by the presence of water-soluble rocks, and as such the site is classified as "non-dolomitic land".

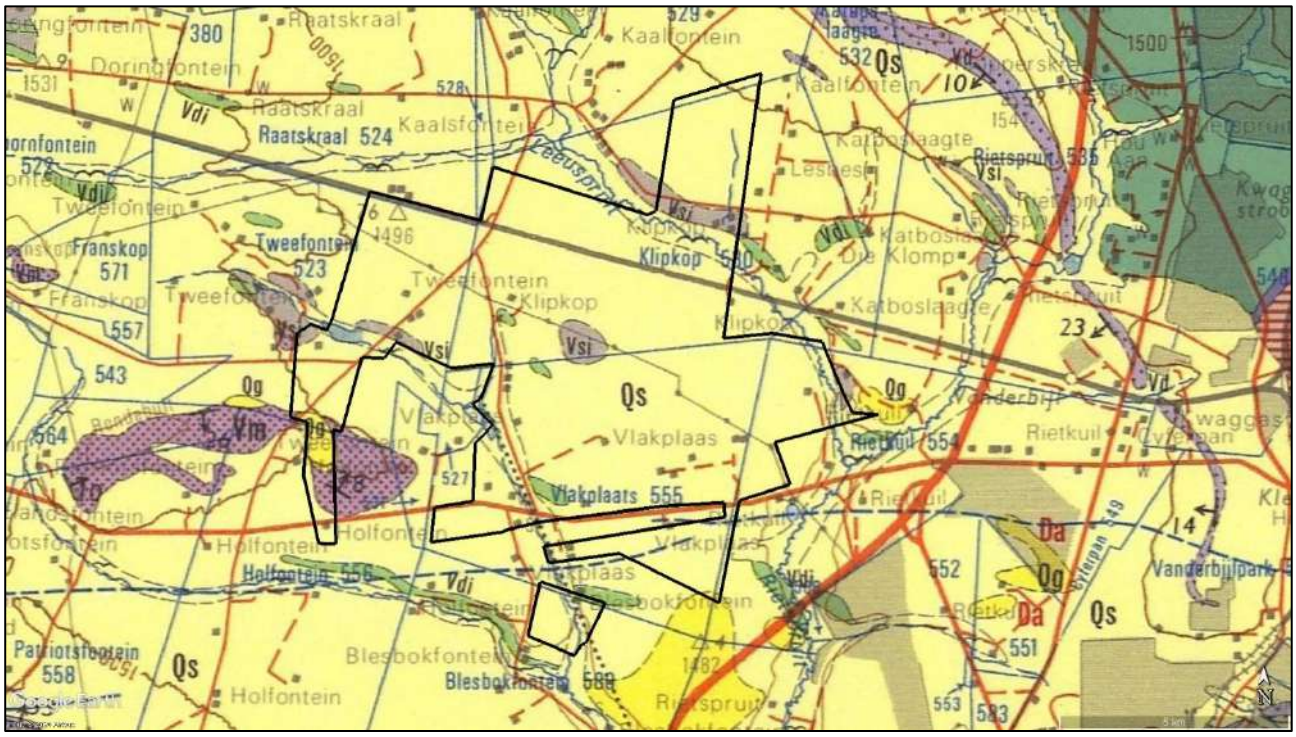

Figure 3-1: Regional Geological sheet (cropped 1:250 000 scale of 2626 West Rand)

Table 3-1: Regional geology symbol summary

Symbol	Age	Sedimentary and Volcanic Rocks			Rock Type
		Supergroup	Group	Formation/ Subgroup	
Qs	Quaternary				Colluvium Alluvium (gravel sand; greyish to blackish, clayey soil)
Qg					Transported gravel in a sandy matrix
V-di	-	N/A			Diabase (intrusive rock)
Vm	Vaalian	Transvaal	Pretoria	Magalies	Quartzite
Vsi				Silverton	Slate, shale, hornfels, graphitic with andalusite, quartzite
Vd				Daspoort	Quartzites and shales, locally ferruginous
Vs				Strubenkop	Light brown shale with siltstone, sandstone and quartzite

3.2 Seismicity

Seismic hazard zones applicable to South Africa are depicted in **Figure 3-2**. The zones are determined from the seismic hazard map which presents the peak ground acceleration with a 10 % probability of being exceeded in a 50-year period. It included both natural and mining-induced seismicity (SANS10160-4, 2017).

The following zones are considered:

- Zone I: Natural seismic activity
- Zone II: Regions of mining-induced and natural seismic activity

The site is situated within Zone II; therefore, seismicity is a concern for this site. The structural engineer should determine if design precautionary measures are required, as guided by SANS10160-4.

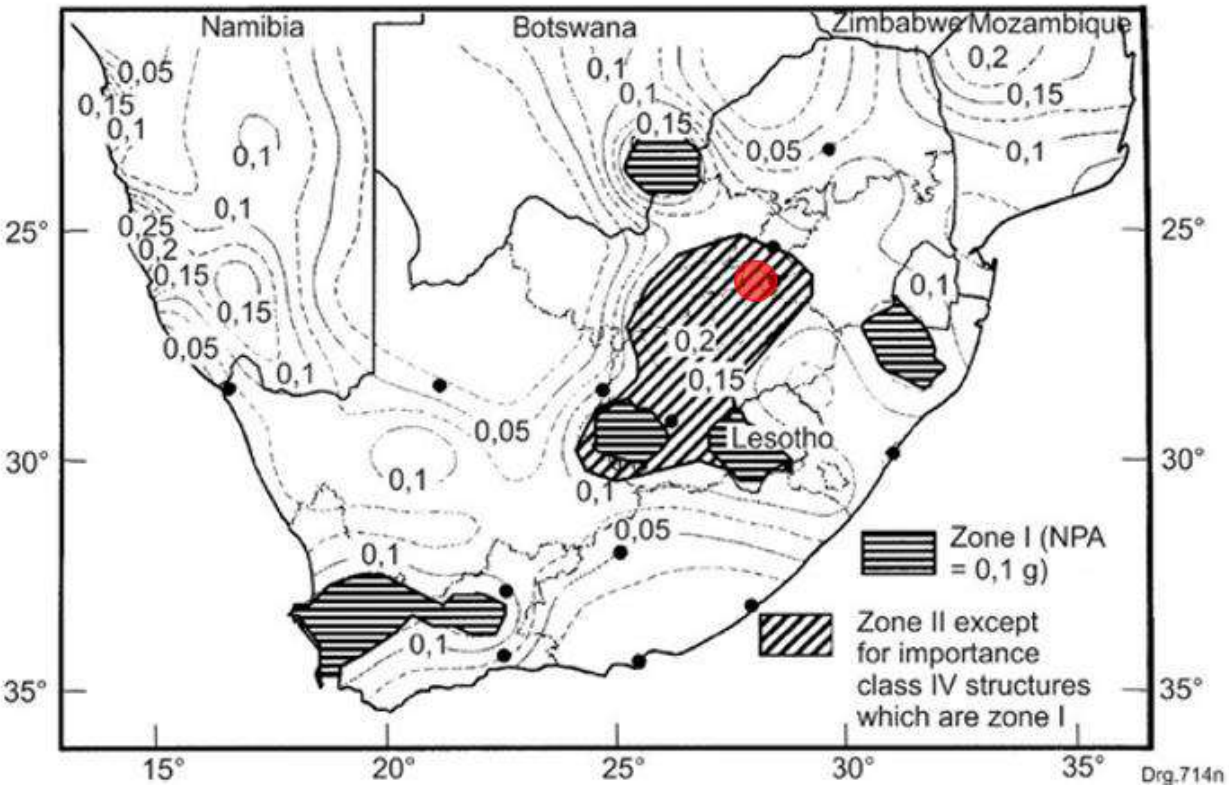

Figure 3-2: Seismic Hazard Map of South Africa

4. Geotechnical Investigation

4.1 Overview

The preliminary level geotechnical investigation was carried out between the 19th and 22st August 2024 and comprised of twenty-five (25No.) excavated trail pits using a CASE 570T tractor loader backhoe (TLB) and profiling by an engineering geologist.

Based on the limited excavated trail pit soil profiles and readily available information, the regional area is generally covered with an upper topsoil with localised fill material towards existing infrastructures.

The topsoil horizon is generally underlain by colluvial and alluvial transported materials with the alluvium materials situated near low-lying drainage areas. A pebble marker horizon or pedogenic formation underlies

the abovementioned transported horizons and separates the transported material from the in-situ residual soils. The typical residual material encountered are residual shale, residual quartzite, and localised residual diabase of which the diabase and quartzites are the lessor. The residual horizons generally transition to the respective parent rock type's weathered state which were general gradual with occasional sudden transitions.

The general pedogenic formations encountered in the trail pits are well developed nodular ferricrete, honeycomb ferricrete and localised hardpan ferricrete.

The locality of the excavated test pit positions is illustrated in **Figure 4-1**.

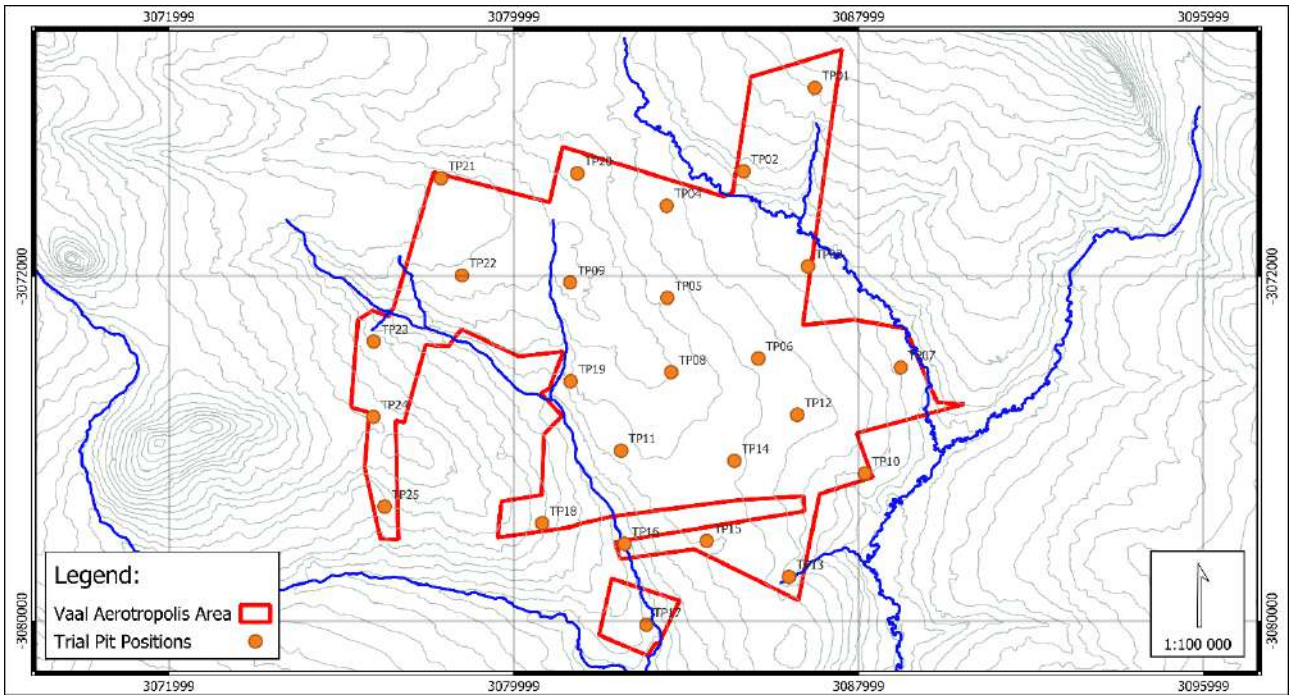

Figure 4-1: Excavated trail pit positions

4.2 Site Soil Profiles

The general simplified soil profiles and rock profiles encountered in the trail pits is described as follows:

- A topsoil horizon generally has an open structure and loose consistency. The horizon was encountered to a depth of 0.20 to 0.40 mbgl;
- A loose to occasionally medium dense colluvium horizon with a voided to open structure was encountered to a depth of 0.50 to 1.00 mbgl. Locally slightly ferruginised colluvium was encountered to a depth of 1.90 mbgl in trial pit TP01.
- Alluvium material was encountered from a depth of 0.20 mbgl to varying depth between 0.90 to 3.20 mbgl. The typical alluvium material transitions from a stiff sandy clay to a firm clayey sand in the upper profiles to a sandy clayey silt or clayey sandy silt in the deeper profiles.
- Generally a pebble marker horizon was encountered at the base of the transported horizons. The pebble marker was generally encountered at shallow depths at approximately 1.00 mbgl but locally down at termination depths of the test pits at approximately 3.00 mbgl (test pit TP15 and TP16). This layer is usually described as medium dense to firm, open in structure, and contains a mix of sub-rounded and occasionally angular gravels. It is often associated with a slight ferruginous.

- Pedogenic formations (honeycomb to nodular ferricrete) were also encountered at the base of the transported materiel with a medium dense to firm in-situ consistency.
- Residual shale was generally encountered below the pebble marker and/or pedogenic formations down to depth. The material was generally described as yellowish-brown to blotched or mottled shades of grey, black, red, and occasionally orange. It is generally stiff to firm, characterized by fissures and occasional shattered or pinholed textures, indicative of its weathered and fragmented state. The material is composed of a mix of clayey, sandy, and gravelly silt, with weakly to moderately cemented nodules of iron and manganese oxides contributing to its slightly ferruginised nature. Residual shale may also contain sub-angular gravel-sized shale fragments, and while it is relatively stable, variations in its density and moisture content can be encountered depending on its depth and degree of weathering.
- Weathered shale was locally encountered below the residual shale in test pits. The weathered shale was in a completely to highly weathered state and profiled as extremely weak to very weak rock. The weathered shale is highly fractured and very intensely laminated.
- Locally residual quartzite was encountered at test pit TP18 from 0.9 to 1.50 mbgl. The horizon was described as slightly moist, red, blotched orange, mottled black, medium dense to dense, voided, clayey gravelly silty sand with sub-angular quartzite boulder to the base of the zone.
- Residual diabase with cobble size core stones were also identified at an existing borrow pit located near TP21.

A summary of the typical depth of the soil profiles are presented in **Table 4-1**.

Table 4-1: Summary of excavated trial pits

TP ID	Topsoil (mbgl)	Colluvium (mbgl)	Alluvium (mbgl)	Pebble Marker (mbgl)	Pedogenic Formation (mbgl)	Residual Quartzite (mbgl)	Residual Shale (mbgl)	Weathered Shale (mbgl)	Terminated Depth (mbgl)
TP01	0.00 - 0.40	0.40 - 1.90					1.90-3.00		3.00
TP02	0.00 - 0.25	0.25 - 0.60		0.60 - 0.80			0.80 - 1.30	1.30 - 2.60	2.60
TP03	0.00 - 0.15	0.15 - 0.60	0.60 - 3.10						3.10
TP04	0.00 - 0.10		0.10 - 3.00						3.00
TP05	0.00 - 0.10		0.10 -0.90	0.90 - 1.10	1.10 - 2.50		2.60 - 3.00		3.00
TP06	0.00 - 0.20		0.20 - 2.00				2.00 - 2.50	2.50 - 2.95	2.95
TP07	0.00 - 0.20		0.20 - 3.20						3.20
TP08	0.00 - 0.30				0.30 - 1.50		1.50 - 2.80		2.80
TP09	0.00 - 0.35	0.35 - 0.80		0.80 - 1.00			1.00 - 2.10	2.10 - 3.10	3.10
TP10	0.00 - 0.30	0.30 - 0.80		0.80 - 1.00			1.00 - 1.50	1.50 - 3.00	3.00
TP11	0.00 - 0.30	0.30 - 0.60		0.60 - 0.80	0.80 - 2.00		2.00 - 2.55	2.55 - 2.95	2.95
TP12	0.00 - 0.30						0.30 - 0.60	0.60 - 1.80	1.80
TP13	0.00 - 0.10		0.10 - 1.50				1.50 - 2.50	2.50 - 3.00	3.00
TP14	0.00 - 0.20	0.20 - 0.50			0.50 - 1.20		1.20 - 2.90		2.90
TP15	0.00 - 0.25		0.25 - 2.80	2.80 - 3.00					3.00
TP16	0.00 - 0.10		0.10 - 2.70	2.70 - 2.90					2.90
TP17	0.00 - 0.30		0.30 - 3.00						3.00
TP18	0.00 - 0.20				0.20 - 0.90	0.90 - 1.50			1.50
TP19	0.00 - 0.15	0.15 - 0.80			0.80 - 1.30		1.30 - 3.00		3.00
TP20	0.00 - 0.30		0.30 - 2.10				2.10 - 2.70	2.70 - 3.20	3.20
TP21	0.00 - 0.10		0.10 - 1.10	1.10 - 1.30			1.30 - 3.00		3.00
TP22	0.00 - 0.35	0.35 - 1.80					1.80 - 3.05		3.05
TP23	0.00 - 0.40	0.40 - 1.30		1.30 - 1.50			1.50 - 2.70	2.70 - 3.50	3.50
TP24	0.00 - 0.25				0.25 - 0.60				0.60
TP25	0.00 - 0.35		0.35 - 3.10						3.10

4.3 Geotechnical Constraints

The site evaluation and expected geotechnical constraints are based on a data retrieved form a desktop study, soil profiles, site drive-over survey and satellite imagery.

The impact of the geotechnical constraints relevant to urban development may be evaluated by the method outlined by SANS634 (2012) summarised in Error! Not a valid bookmark self-reference.. Based on the underlying geology and site conditions the following major constraints according to the list identified during this study:

- Open structured topsoil, colluvium and residuum horizons with a slight collapse potential in the in-situ state (uncompacted state);
- Shallow seasonal seepage water conditions and/or saturated soil profiles (during and immediately after heavy and/or continuous downpours) based on the presence of the prominent pedogenic formation present in the upper soil horizons and seepage encountered in numerous trial pits during the investigation;
- The transported (alluvium) and lower residuum (diabase and potentially Silverton shales) soils with an expected moderate expansive potential;
- Alluvium, residual shales and diabase which have medium percentage of fines (silt and clay), that is expected to result in a medium compressibility potential in the uncompacted and compacted states;
- Upper soils with an intermediate to high susceptibility to erosion if exposed and subject to concentrated water flow;
- Localised well cemented ferricrete, shallow bedrock and/or potential large size boulders or corestones that may result in severe excavation difficulty and possible use of pneumatic equipment and/or blasting for service installations and/or cut-to-fill-to-level preparation;
- Situated within a mining-induced and natural seismic activity region; and
- Areas within and adjacent to a known drainage channel and floodplains with slope less than 1 %.

Other constraints identified for this site include:

- Site slope that is expected to require cut-to-fill-to-level platform preparation for small to large structures and potential major cut-to-fill-to-level preparation for the runway;
- Expected localised large size boulders or corestones that may result in composite founding conditions where foundations span incompressible competent material and compressible soil;
- Soils with an expected unfavourable aggressiveness rating towards ferrous metals/services;
- Presence of localised trees with root systems and historic soak away/French drain systems that may affect the soils negatively if removed that will require rehabilitation or foundation modifications;
- Foundations and/or underground services that may result in composite founding conditions; and
- Localised areas of surficial uncontrolled fill/rubble that are expected to result in composite founding conditions that will require minor site preparation in these affected areas.

Table 4-2: Relevant geotechnical classification for urban development classes (SANS634, 2012)

Constraint		Most Favourable (1)	Intermediate (2)	Least Favourable (3)
A	**Collapsible soil**	Any collapsible horizon or consecutive horizons totalling a depth of less than 750 mm in thickness[a]	Any collapsible horizon or consecutive horizons with a depth of more than 750 mm in thickness	A least favourable situation for this constraint does not occur
B	**Seepage**	Permanent or perched water table more than 1,5 m below ground below	Permanent or perched water table less than 1,5 m ground surface	Swamps and marshes
C	**Active soil**	Low soil-heave potential anticipated[a]	Moderate soil-heave potential anticipated	High soil-heave potential anticipated
D	**Compressible soil**	Low soil compressibility anticipated[a]	Moderate soil compressibility anticipated	High soil compressibility anticipated
E	**Erodibility of soil**	Low	Intermediate	High
F	**Difficulty of excavation to 1.50 m depth**	Scattered or occasional boulders less than 10 % of the total volume[a]	Rock or hardpan pedocretes between 10 % and 40 % of the total volume	Rock or hardpan pedocretes more than 40 % of the total volume
G	**Undermined ground**	Undermining at a depth greater than 200 m below surface (except where total extraction mining has not occurred)	Old undermined areas to a depth of 200 m below surface where stope closure has ceased	Mining within less than 200 m of surface or where total extraction mining has taken place
H	**Instability in areas of soluble rock**	Possibly stable. Areas of dolomite overlain by Karoo rocks or intruded by sills. Areas of Black Reef rocks. Anticipated inherent hazard class 1 (see SANS 1936-2)	Potentially characterized by instability. Anticipated inherent classes 2 to 5	Known sinkholes and dolines. Anticipated inherent hazard classes 6 to 8 (see SANS 1936-2)
I	**Steep slopes**	Between 2° and 6° (all regions)	Slopes between 6° and 18° and less than 2° (Natal and Western Cape) Slopes between 6° and 12°and less than 2° (all other regions)	More than 18° (Natal and Western Cape) More than 12° (all other regions)
J	**Areas of unstable natural slopes**	Low risk	Intermediate risk	High risk (especially in areas subject to seismic activity)
K	**Areas subject to seismic activity**	10 % probability of an event less than 100 cm/s² within 50 years	Mining-induced seismic activity more than 100 cm/s²	Natural seismic activity more than 100 cm/s²
L	**Areas subject to flooding**	A "most favourable" situation for this constraint does not occur	Areas adjacent to a known drainage channel or floodplain with slope less than 1 %	Areas within a known drainage channel or floodplain

Note 1: Areas should be designated by the numeral associated with the most appropriate descriptor in columns 3 to 5 followed by the letter associated with the constraint. For example, an area designated as Zone 2BF would be an intermediate class with anticipated seepage and excavation problems while an area designated as Zone 3B would be least favourable and not recommended for development due to surface water inundation.

Note 2: More detailed information on undermined land can be obtained from Stacey, T.R. and Bakker, D. The erection or construction of buildings and other structures on undermined ground. NOTE 3 Undermining assessments should be carried out by persons with expert knowledge of such conditions.

[a] *These areas are designated as 1A, 1C, 1D, or 1F where localized occurrences of the constraint might arise.*

4.4 Preliminary Geotechnical Zonation

The site is divided into four (4No.) simplified expected FACET areas that are expected to have similar geotechnical conditions and constraints based on the findings of this preliminary investigation (**Table 4-2**):

FACET I: S2-H1 (P – Anthropogenic fill)/2BCDEKL (2F)

FACET II: S2-H2/3CL 2BDEK (2F)

FACET III: S1/ 2-3F 2ABDEK

FACET IV: S1 (P – Historic workings)/2BDEFK

The expected conditions for each zone are summarised in Error! Reference source not found.. The expected FACET areas are shown in **Figure 4-2**.

Table 4-3: Expected major geotechnical constraints for the FACET areas

FACET	Major Geotechnical Constraints
I	• Compressible and potentially collapsible soils • Potentially expansive soils • Expected localised well cemented pedogenic formations, shallow bedrock and/or large size boulders or corestones that may cause severe excavation difficulty • Shallow seasonal groundwater seepage and localised ponding water that will necessitate mitigation such as subsoil drainage and pioneer layer construction • Erodibility of upper soils • Areas situated adjacent to known drainage channel or floodplain with slope less than 1 % • Localised fill material with existing structures and foundations
II	• Expected prominent severe waterlogged to shallow water seepage conditions • Compressible soils • Potentially expansive soils • Expected shallow well cemented pedogenic formations that may cause severe excavation difficulty
III	• Excavation difficulties on localised outcropping to shallow bedrock and/ or shallow well cemented pedogenic formation that may cause severe excavation difficulties • Expected thin potentially collapsible soils • Erodibility of upper soils • Shallow seasonal seepage and ponding water
IV	• Areas previously borrowed with ditches and trenches that may need to be rehabilitated • Water ponding in holes and depressions • Uncontrolled fill of varying composition • Erosion of induced steep angles of the borrow pit sidewalls

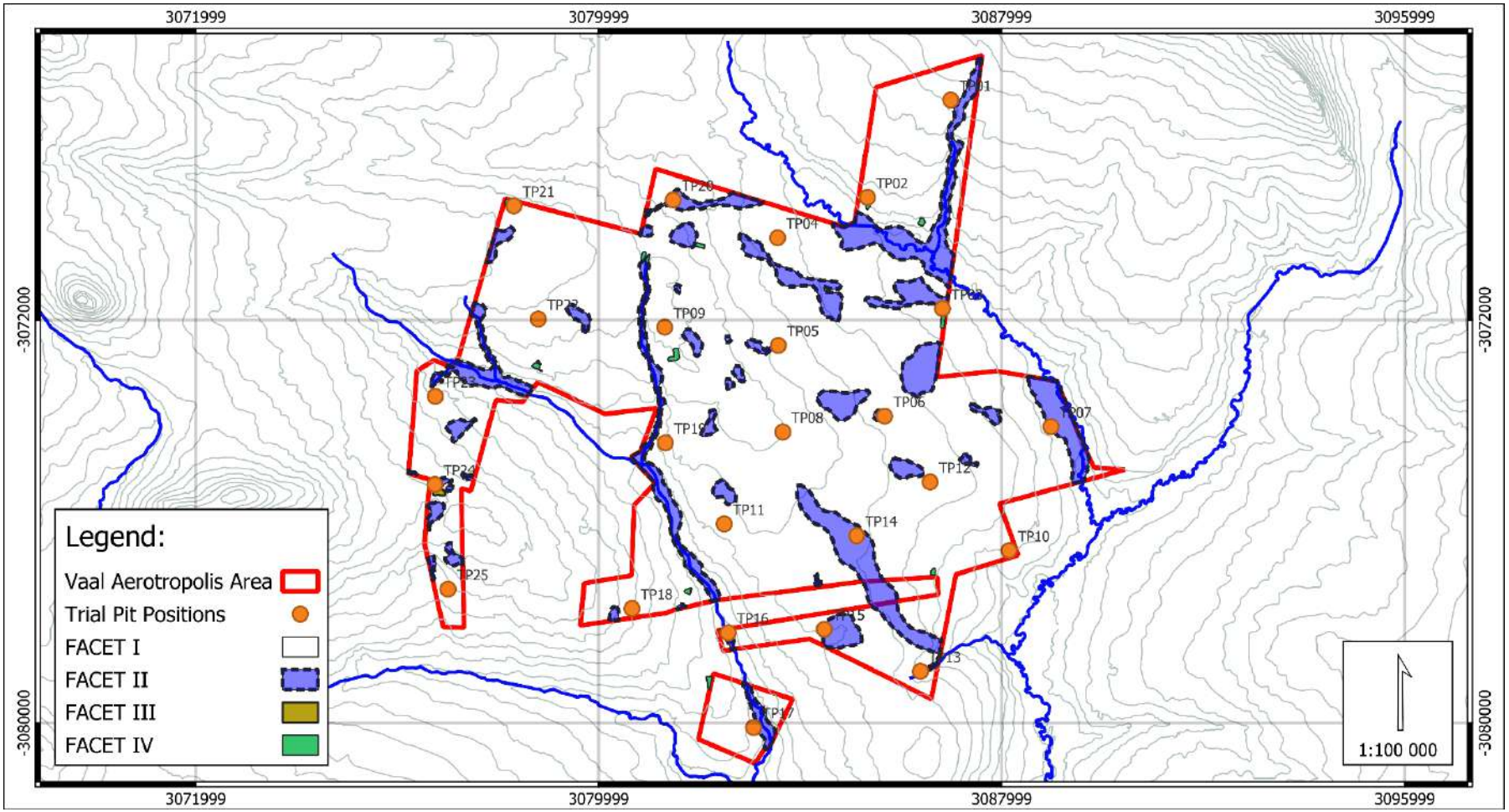

Figure 4-2: Simplified FACET areas of similar geotechnical constraints

4.5 Expected Material Utilisation

Based on the information retrieved during the desktop study and local knowledge of the area, the preferred material to target for construction materials is the ferricrete and quartzite. The information herein is sourced from regional reports on similar materials.

i. Ferricrete

Ferricrete is usable as a construction aggregate when its well-developed and well-cemented. Nodular, honeycomb and hardpan ferricrete can provide G5 to G7 when the material is moderately to strongly cemented. Weakly to very weakly cemented ferricrete will breakdown into fines when wetted and placed under a dynamic load, such as compaction from a vibrating roller, but can provide a G8 to G9 material. The typical constraint of ferricrete is the variability in thickness and degree of cementation.

ii. Shales

The shales from the Silverton Formation are expected to classify as G6 to >G9 material in the unweathered to completely weathered state.

iii. Pebble Marker

The transported pebble marker zone is expected to classify as A-2 to A-4, SC/SM to GC and G7 to G8 depending on the grading.

iv. Diabase

The diabase rock in the region generally weathers to a sandy silt with minor amounts of sand and gravel. The upper and lower diabase residuum materials are expected to generally classify as “CL to ML”, “SC” to “GC” according to the Unified Soil Classification System. The residual diabase is expected to classify as G8 to >G9 material and is not recommended for road or mattress construction.

5. Conclusions

The following can be concluded:

- The site is not underlain by potential soluble dolomitic formations and a dolomite stability investigation is not required.
- No potential economic deposits are indicated on site and expected to affect the developability of this site.
- No undermining is present that may affect the developability of the site as from a subsurface instability point of view.
- Soils with low bearing capacity, collapsible fabric, compressibility and expansiveness potential will was encountered.
- Localised shallow rock and/or corestones are expected, which may cause excavation difficulties.
- Prominent shallow strongly cemented pedogenic formations such as honeycomb to hardpan ferricrete are expected across the site and are an indicator of the presence of shallow seasonal seepage water conditions.
- Severe seasonal standing and/or seepage water are expected across the site and towards lower-lying areas.
- **The study did not identify any geotechnical fatal flaws that would preclude the proposed development. Notwithstanding, there will be geotechnical constraints, as mentioned above, which needs to be considered during the development planning.**

- The constraints listed are the major expected geotechnical constraints that may affect the proposed development and should only be used for guideline purposes. The constraints should however be identified, confirmed and zoned in the detailed intrusive investigation to come, as per standard practice.
- This report is for informational and basic planning purposes only and outlines the major expected geotechnical constraints encountered during the site investigation. The report is not deemed suitable for detailed design purposes.

6. Way Forward

The following will be recommended regarding the way forward:

- Wetland delineation must be undertaken by a specialist to identify and delineate wetlands within the study area. This assessment may render portions of the site undevelopable.
- The potential flood lines (1:100 and 1:50 year) need to be confirmed/investigated and incorporated in the proposed development layout and preliminary assigned geotechnical facets. The flood assessment may render portions of the site undevelopable.
- The investigations to follow should be guided as outlined in SAICE 2010 code of practice as for Feasibility to Design level engineering geotechnical investigations.

References

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Appendix A.

Detailed Trail Pit Logs

TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP01
X COORD (LNG): 27.73086
Y COORD (LAT): -26.55219
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots, agriculturally reworked Topsoil. 0.4 m		
		Loose, COLLUVIUM Slightly moist, light orange brown, mottled black, loose, open to slightly voided, clayey silty sand, Colluvium. 1 m		
1		**Firm, Slightly Ferruginised COLLUVIUM** Slightly moist to moist, light orange brown to light brown, mottled black, firm, open to slightly fissured, fine gravelly silty clayey sand, Colluvium. Note: Trace amounts of sub-rounded gravels encountered between depth of 1.70 -1.90 m, potential pebble marker? 1.9 m		
2		**Firm to Stiff, REWORKED RESIDUAL SHALE** Moist, light yellowish brown blotched light grey, mottled black, firm to stiff, fissured with occasional slickensided surfaces, clayey sandy silt, slightly ferruginised Reworked Residual Shale. 2.8 m		
3		**Stiff, RESIDUAL SHALE** Moist, yellowish brown with brownish grey patches, mottled black to red, occasionally blotched light grey, fissured to slightly shattered, stiff, clayey sandy silt, weakly cemented manganese oxide concretions and moderately cemented nodules, Residual Shale. 3 m		
4				

Notes:
1) No sidewall instability
2) No groundwater seepage encountered
3) Terminated at required depth of 3.00 mbgl
4) Excavation terminated in soft conditions

MACHINE: CASE 570T
DEPTH(m): 3
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP02
X COORD (LNG): 27.71603
Y COORD (LAT): -26.56772
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots,Topsoil. 0.25 m		
		Loose, COLLUVIUM Slightly moist, light orange brown to light brown, mottled black, loose, open to voided, clayey gravelly silty sand, trace amounts of sub-angular coarse gravels, Colluvium. 0.6 m		
		Firm, PEBBLE MARKER Slightly moist, light orange brown, mottled black to red, medium dense, open, clayey silty gravelly sand, minor sub-angular coarse gravels and traces of sub-angular cobbles, minor rounded weakly cemented manganese oxide nodular concretions, matrix supported, Pebble Marker. 0.8 m		
1		**Firm to Stiff, REWORKED RESIDUAL SHALE** Slightly moist, yellowish brown, mottled black and red, firm, fissured to slightly shattered, clayey gravelly sandy silt, weakly cemented iron oxide and manganese oxide concretions, slightly ferruginised Reworked Residual Shale. 1.3 m		
		EXTREMELY WEAK ROCK SHALE Light yellowish brown, stained red to black, completely to highly weathered, very intensely to intensely laminated, very thinly bedded, very highly fractured, extremely weak rock, Shale. 1.7 m		
		EXTREMELY WEAK TO WEAK ROCK SHALE Light yellowish brown, stained red to black, highly weathered, intensely laminated, thinly bedded, highly fractured, extremely weak to very weak rock, Shale. 2.2 m		
2		**VERY WEAK TO WEAK ROCK SHALE** Light yellowish brown, stained black, highly weathered, intensely laminated, thinly bedded, highly fractured, very weak rock to lower bound weak rock, Shale. 2.6 m		
		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated due to slow progress approaching confined refusal in weak rock 4) Excavation terminated in soft conditions		
3				
4				

MACHINE: CASE 570T
DEPTH(m): 2.6
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP03
X COORD (LNG): 27.72940
Y COORD (LAT): -26.58545
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, silty clayey sand with minor grass roots, Topsoil. 0.15 m		
		Loose, COLLUVIUM Slightly moist, reddish brown to brown, mottled yellow orange to cream, loose, open to pinholed, clayey silty sand, trace amounts of sub-angular fine gravels, Colluvium. 0.6 m		
		Medium Dense to Firm, Slightly Calcareous ALLUVIUM Moist, yellowish brown, mottled black, streaked cream to light grey, medium dense to firm with depth, open to slightly voided, gravelly clayey silty sand, traces of rounded and subrounded, fine to medium gravels and occasional very weakly cemented calcrete nodules, slightly calcareous Alluvium. 0.85 m		
1		**Firm, Gravelly ALLUVIUM** Moist, light grey, mottled black, firm, shattered, sandy clayey gravelly silt, abundance of black, weakly to moderately cemented, rounded nodular manganese oxide concretion and rounded to subrounded, fine to medium gravels of mixed origin, Gravelly Alluvium. 1.1 m		
		Firm, Fine ALLUVIUM Moist, light grey, mottled black, yellow to orange and occasionally red, firm, fissured with occasional slickensided surfaces, clayey sandy silt, with black very weakly to weakly cemented, rounded to sub rounded, manganese oxide nodular concretions, Alluvium 1.9 m		
2		**Stiff, Fine ALLUVIUM** Moist, light grey, mottled black, yellow to orange stiff, fissured to shattered with occasional slickensided surfaces, clayey sandy silt, Alluvium. 2.6 m		
3		**Medium Dense, Alluvium** Moist brownish orange, blotched light grey, mottled black, medium dense, fissured, clayey silty sand with occasional clayey sandy silt pockets, interpreted as Alluvium. 3.1 m		
4		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth of 3.10 mbgl 4) Excavation terminated in soft conditions		

MACHINE: CASE 570T
DEPTH(m): 3.1
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP04
X COORD (LNG): 27.69999
Y COORD (LAT): -26.57415
ELEVATION:

SHEET 1 of 1

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown, loose, open, silty clayey sand with minor grass roots, Topsoil. 0.1 m		
		Stiff, Clayey ALLUVIUM Moist, black to dark grey, stiff, fissured to pinholed, silty sandy clay, Alluvium. 0.6 m		
		Firm, ALLUVIUM Moist, brownish grey, occasionally mottled off-white, firm, open, clayey silty sand, Alluvium 0.8 m		
1		**Firm, Slightly Calcareous ALLUVIUM** Moist, brownish grey, occasionally mottled orange to yellow and blotched white, firm, open to voided, gravelly silty clayey sand, occasional sub rounded to sub-angular fine to medium gravels lower in profile, slightly calcareous Alluvium. 1.2 m		
2		**Firm to Stiff, Fine ALLUVIUM** Moist, light grey, mottled black and light orange yellow, firm to stiff, open to fissured with occasional slickensided surfaces, clayey sandy silt, Alluvium. 2.5 m		
3		**Stiff, Fine ALLUVIUM** oist, light grey, mottled greyish brown and orange to yellow, stiff, fissured to shattered with slickensided surfaces, clayey sandy silt, Alluvium. 3 m		
4		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth of 3.00 mbgl 4) Excavation terminated in soft conditions		

MACHINE: CASE 570T
DEPTH(m): 3
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP05
X COORD (LNG): 27.70012
Y COORD (LAT): -26.59130
ELEVATION:

SHEET 1 of 1

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown, loose, open, silty clayey sand with minor grass roots, Topsoil. 0.1 m		
		Stiff, Clayey ALLUVIUM Slightly moist to moist, black, stiff, fissured to shattered, silty sandy clay, Alluvium. 0.3 m		
		Firm, ALLUVIUM Moist, dark grey, firm, open to voided, silty clayey sand, Alluvium. 0.6 m		
		Firm to Medium Dense, ALLUVIUM Slightly moist to moist, brownish grey, occasionally mottled white, firm to medium dense, open, clayey silty sand, Alluvium 0.9 m		
1		**Medium dense, PEBBLE MARKER** Moist, orange brown, mottled black and light orange to red, medium dense, open, clayey silty gravelly sand with traces of sub-rounded, medium to coarse gravels, minor black, rounded, manganese oxide nodular concretions, potential Pebble Marker. 1.1 m		
		Firm to Stiff, NODULAR FERRICRETE Moist, orange brown to light brown, mottled orange to red and black, firm to stiff, open to voided, clayey sandy gravelly silt, abundance of rounded, moderately cemented manganese oxide nodular concretions and very weakly cemented iron oxide concretion, Nodular Ferricrete 2.5 m		
2		**Stiff, RESIDUAL SHALE** Moist, light grey to light orange brown, blotched light grey, mottled and light orange to yellow, stiff, fissured to shattered, sandy clayey gravelly silt, Residual Shale. 3 m		
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth of 3.00 mbgl 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 3
WIDTH (m): 0.80

DATE PROFILED: 19/08/2024
PROFILED BY: JPP
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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP06
X COORD (LNG): 27.71909
Y COORD (LAT): -26.60260
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown, loose, open, silty clayey sand with minor grass roots, Topsoil. 0.2 m		
		Stiff, Clayey ALLUVIUM Slightly moist to moist, black, stiff, fissured to shattered, silty sandy clay, Alluvium. 0.5 m		
		Firm, ALLUVIUM Moist, dark grey, firm, open to voided, silty clayey sand, Alluvium. 0.8 m		
1		**Firm, Slightly Calcareous ALLUVIUM** Slightly moist to moist, brownish grey, occasionally mottled white, firm to medium dense, open, clayey silty sand, slightly calcareous Alluvium 1.3 m		
		Firm, Fine ALLUVIUM Moist, grey mottled red to orange and black, firm to stiff, fissured to shattered with occasional slickensided surfaces, clayey sandy silt, traces of sub-rounded gravels lower in profile (potential pebble marker), Alluvium 2 m		
2		**Stiff, RESIDUAL SHALE** Moist, yellow blotched red to orange and grey, mottled black, stiff, fissured, clayey sandy gravelly silt, with highly weathered, sub-angular, elongated, fine to medium gravel size shale, Residual Shale. 2.5 m		
		EXTREMELY WEAK TO VERY WEAK ROCK SHALE Light brownish yellow, stained black and dark purple on joint surfaces, highly weathered, thinly to occasionally very thinly bedded, highly fractured, extremely weak to very weak rock, Shale. 2.95 m		
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at 2.95 mbgl, near required depth of 3.00 mbgl 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 2.95
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
PROFILED BY: JPP
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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP07
X COORD (LNG): 27.74874
Y COORD (LAT): -26.60427
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, silty clayey sand with minor grass roots, Topsoil. 0.2 m		
		Firm, Clayey ALLUVIUM Moist, black to dark brownish grey, firm, fissured, silty sandy clay, Alluvium. 0.6 m		
		Firm, ALLUVIUM Moist, brownish grey, firm, fissured with pinholes, silty clayey sand, Alluvium. 1.2 m		
1		**Medium Dense to Firm, ALLUVIUM** Moist, light grey, blotched yellow to orange, medium dense to firm, fissured to slightly voided, clayey gravelly silty sand, with minor sub-rounded to rounded coarse gravels to cobbles, Alluvium 1.4 m		
		Firm, Fine ALLUVIUM Moist, light grey, mottled black, yellow to orange and occasionally red, firm, fissured to shattered with occasional slickensided surfaces, clayey sandy silt, Alluvium. 2.6 m		
2		**Firm to Soft, Alluvium** Moist to very moist, pale grey, blotched yellow to orange, mottled black, firm to soft, fissured, clayey sandy silt, traces of sub-rounded medium to coarse gravels, interpreted as Alluvium. 3.2 m		
3		Notes: 1) Sidewall collapse at 2.50 mbgl. 2) very slow groundwater seepage encountered at 3.00 mbgl 3) Terminated at required depth of 3.20 mbgl 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 3.2
WIDTH (m): 0.80

DATE PROFILED: 21/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP08
X COORD (LNG): 27.70092
Y COORD (LAT): -26.60512
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots, agriculturally reworked Topsoil. 0.3 m		
		Medium Dense, HONEYCOMB FERRICRETE Dry, light yellowish brown, mottled orange to red and black, medium dense, voided, clayey silty gravelly sand with moderately cemented manganese oxide concretions and weakly cemented iron oxide concretions and minor sub-rounded medium to coarse gravels, Honeycomb Ferricrete. 0.6 m		
		Medium Dense, NODULAR FERRICRETE Slightly moist, light brown to orange brown, mottled orange to red and black, medium dense, voided, clayey silty gravelly sand, with moderately cemented, rounded, manganese oxide nodular concretions, Nodular Ferricrete. 1.5 m		
1				
		Medium Dense, REWORKED RESIDUAL SHALE Moist, light orange brown, mottled black and occasionally orange to red, medium dense, voided, clayey gravelly silty sand, with very weakly, black, manganese oxide and ion oxide nodular concretions, interpreted as Reworked Residual Shale. 2 m		
2		**Firm to Stiff, RESIDUAL SHALE** Moist, light orange brown, mottled black and occasionally orange to red, occasionally blotched to streaked light grey, firm to stiff, pinholed to voided, clayey gravelly sandy silt, with weakly to moderately cemented, black, manganese oxide and ion oxide nodular concretions, interpreted as Residual Shale. 2.8 m		
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at 2.80 mbgl due to slow progress approaching required depth of 3.00 mbgl 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 2.8
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
PROFILED BY: JPP
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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP09
X COORD (LNG): 27.67988
Y COORD (LAT): -26.58843
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots, Topsoil. 0.35 m		
		Medium Dense, Ferruginised COLLUVIUM Dry, orange brown, mottled orange to red and black, medium dense, voided, clayey silty gravelly sand with moderately cemented manganese oxide concretions and weakly cemented iron oxide concretions, Ferruginised Colluvium. 0.8 m		
		Medium dense, PEBBLE MARKER Slightly moist, orange brown, mottled orange to red and black, medium dense, open, clayey silty sandy gravel, with an abundance of sub-rounded, medium to coarse gravels to cobbles, Pebble Marker 1 m		
1		**Medium Dense, REWORKED RESIDUAL SHALE** Moist, orange brown, mottled black, firm, fissured to open, clayey sandy silt, slightly ferruginised Reworked Residual Shale. 2.1 m		
2		**EXTREMELY WEAK ROCK SHALE** Light yellowish brown, stained orange to black, highly weathered, intensely laminated, thinly bedded, highly fractured, extremely weak rock, Shale. 2.7 m		
		VERY WEAK ROCK SHALE Light yellowish brown, stained black, highly weathered, intensely laminated, thinly bedded, highly fractured, very weak rock, Shale. 3.1 m		
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 3.1
WIDTH (m): 0.80

DATE PROFILED: 19/08/2024
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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP10
X COORD (LNG): 27.74129
Y COORD (LAT): -26.62401
ELEVATION:

SHEET 1 of 1

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots, Topsoil. 0.3 m		
		Medium Dense, Ferruginised COLLUVIUM Dry, orange brown, mottled orange to red and black, medium dense, voided, clayey silty gravelly sand with moderately cemented manganese oxide nodular concretions and very weakly cemented iron oxide concretions, Ferruginised Colluvium. 0.8 m		
1		**Firm, PEBBLE MARKER** Slightly moist, orange brown blotched olive grey, mottled orange to red and black, firm, open, sandy clayey gravelly silt, with an abundance of sub-rounded, medium gravels and rounded moderately cemented manganese oxide nodular concretions, ferruginised Pebble Marker 1 m		
		Firm, REWORKED RESIDUAL SHALE Moist, light grey mottled orange to black, mottled black, firm, fissured to open, clayey gravelly sandy silt, with minor sub-angular, shale gravels, slightly ferruginised Reworked Residual Shale. 1.5 m		
2		**EXTREMELY WEAK ROCK SHALE** Light olive grey to grey, stained orange to black, completely weathered, intensely laminated, thinly bedded, highly fractured, extremely weak rock, Shale. 2.5 m		
3		**VERY WEAK ROCK SHALE** Light grey, stained black and red, highly weathered, intensely laminated, thinly bedded, highly fractured with clayey silt filling between joints, very weak rock, Shale. 3 m		
4		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth 4) Excavation terminated in soft conditions		

MACHINE: CASE 570T
DEPTH(m): 3.5
WIDTH (m): 0.80

DATE PROFILED: 21/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP11
X COORD (LNG): 27.69048
Y COORD (LAT): -26.61977
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots, agriculturally reworked Topsoil. 0.3 m		
		Loose, COLLUVIUM Slightly moist, light orange brown to light brown, mottled black, occasionally blotched dark brown, loose, open, clayey gravelly silty sand, trace amounts of sub-rounded fine gravels, Colluvium. 0.6 m		
		Medium Dense, PEBBLE MARKER Slightly moist, light orange brown, mottled black to red, medium dense, open, clayey silty gravelly sand, minor sub-rounded fine to medium gravels, minor rounded weakly cemented manganese oxide nodular concretions, slightly ferruginised Pebble Marker. 0.8 m		
1		**Firm to Medium Dense, NODULAR FERRICRETE** Slightly moist, yellowish brown, mottled black and red, medium dense to frim, open, clayey sandy gravelly silt, moderately to weakly cemented manganese oxide nodular concretions, Nodular Ferricrete. 2 m		
2		**Firm, REWORKED RESIUDAL SHALE** Slightly moist, yellowish brown, mottled black and red, firm, fissured to slightly shattered, clayey gravelly sandy silt, weakly cemented iron oxide and manganese oxide concretions, slightly ferruginised Reworked Residual Shale. 2.55 m		
		EXTREMELY WEAK TO WEAK ROCK SHALE Light yellowish brown, stained red to black, highly weathered, intensely laminated, thinly bedded, highly fractured, extremely weak to very weak rock, Shale. 2.95 m		
3		Notes: 1) No sidewall instability 2) Very slow groundwater seepage encountered at 2.60 mbgl 3) Terminated due to slow progress approaching required depth 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 2.95
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP12
X COORD (LNG): 27.72720
Y COORD (LAT): -26.61309
ELEVATION:

SHEET 1 of 1

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty gravelly sand with minor roots and an abundance of sub-rounded and sub-angular gravels to cobbles, agriculturally reworked Topsoil. 0.3 m		
		Loose, RESIDUAL SHALE Slightly moist, yellowish brown mottled orange and black, loose, fissured to open, clayey sandy silty gravel, with sub-angular shale gravels, Residual Shale. Note: horizon is dipping in southerly direction to 0.80 m. 0.6 m		
		VERY WEAK ROCK SHALE Light yellowish brown, stained black, highly weathered, intensely laminated, thinly bedded, highly fractured, very weak rock, Shale. Note: horizon dipping in southerly direction to 1.10 mbgl 0.8 m		
1		**WEAK ROCK SHALE** Light yellowish brown, stained black, highly weathered, intensely laminated, thinly bedded, highly fractured, weak rock, Shale. 1.8 m		
		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated due to slow progress approaching confined refusal in weak rock 4) Excavation terminated in soft conditions		
2				
3				
4				

MACHINE: CASE 570T
DEPTH(m): 1.8
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

PeraGage SPECIALIST GEOCONSULTANTS

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP13
X COORD (LNG): 27.72545
Y COORD (LAT): -26.64327
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Slightly moist, dark brown, loose, open, silty clayey sand with grass roots, Topsoil. 0.1 m		
		Stiff, Clayey ALLUVIUM Slightly moist to moist, black, stiff, fissured to shattered, silty sandy clay, Alluvium. 0.5 m		
		Firm, ALLUVIUM Moist, brownish grey, firm, voided to shattered, silty clayey sand, Alluvium. 0.8 m		
1		**Firm, ALLUVIUM** Moist, light grey, mottled yellow, speckled light orange, firm, fissured to shattered, clayey gravelly sandy silt, minor rounded and sub-rounded coarse gravels scattered within profile, Alluvium with potential pebble marker between (1.30 - 1.50 m) 1.5 m		
2		**Firm, REWORKED RESIDUAL SHALE** Moist, light grey blotched yellow to light orange, firm, fissured, sandy gravelly clayey silt, traces of sub-angular shale gravels, Reworked Residual Shale. 2.2 m		
		Stiff, RESIDUAL SHALE Moist, yellowish brown blotched light grey, mottled black and olive grey, stiff, fissured, gravelly clayey silt, with highly weathered, sub-angular, elongated, fine to medium shale gravels, Residual Shale. 2.5 m		
3		**EXTREMELY WEAK TO VERY WEAK ROCK SHALE** Light brownish yellow, stained black and dark purple, highly weathered with completely weathered zones, thinly to occasionally very thinly bedded, highly fractured, extremely weak to very weak rock Shale. 3 m		
		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth of 3.00 mbgl 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 3
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP14
X COORD (LNG): 27.71408
Y COORD (LAT): -26.62165
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots, agriculturally reworked Topsoil. 0.2 m		
		Medium Dense, Slightly Ferruginised COLLUVIUM Dry to slightly moist, light yellowish brown to light brown, mottled orange to red and black, medium dense, voided, clayey gravelly silty sand with weakly cemented manganese oxide nodular concretions, slightly ferruginised Colluvium. 0.5 m		
		Medium Dense, NODULAR FERRICRETE Slightly moist, light brown to orange brown, mottled orange to red and black, medium dense, voided, silty gravelly sand, with moderately cemented, rounded, manganese oxide nodular concretions, Nodular Ferricrete. 1.2 m		
1		**Medium Dense, REWORKED RESIDUAL SHALE** Moist, light orange brown, mottled black and occasionally orange to red, medium dense, voided, clayey silty gravelly sand, with very weakly, black, manganese oxide and ion oxide nodular concretions, Reworked Residual Shale. 1.8 m		
		Firm to Stiff, RESIDUAL SHALE Moist, light orange brown, mottled black and occasionally orange to red, occasionally blotched to streaked light grey, firm to stiff, pinholed to voided, clayey sandy gravelly silt, with weakly to moderately cemented, black, manganese oxide and ion oxide nodular concretions, Residual Shale 2.9 m		
2				
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at 2.90 mbgl due to slow progress approaching required depth of 3.00 mbgl 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 2.9
WIDTH (m): 0.80

DATE PROFILED: 21/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP15
X COORD (LNG): 27.70832
Y COORD (LAT): -26.63655
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Slightly moist, dark brown, loose, open, silty clayey sand with grass roots, Topsoil. 0.25 m		
		Stiff, Clayey ALLUVIUM Slightly moist to moist, black, stiff, fissured to shattered, silty sandy clay, Alluvium. 0.5 m		
		Firm, ALLUVIUM Moist, brownish grey, firm, fissured to slightly voided, silty clayey sand, Alluvium. 0.9 m		
1		**Firm, Slightly Calcareous ALLUVIUM** Moist, light greyish brown, mottled black and cream, occasionally blotched white, firm, fissured, gravelly clayey silty sand, minor rounded and sub-rounded fine to medium gravels scattered within profile, trace amounts of weakly cemented calcrete nodules, slightly calcareous Alluvium. 1.4 m		
2		**Firm, Fine ALLUVIUM** Moist, light grey, speckled yellow to orange and black, firm, shattered with occasional slickensided surfaces, gravelly clayey sandy silt, with traces amounts of rounded fine to medium gravels scattered in profile, Alluvium 2.2 m		
		Stiff, Fine ALLUVIUM Moist, light grey, speckled cream, stiff, shattered with occasional slickensided surfaces, gravelly clayey silt, with minor coarse gravels to cobbles scattered within profile, Alluvium. 2.8 m		
3		**Firm, Basal ALLUVIUM** Moist, light grey, mottled cream to light yellow, firm, shattered with slickensided surfaces, sandy clayey silt matrix, with an abundances of rounded coarse gravels and cobbles, clast supported, Basal Alluvium. 3 m		
4				

Notes:
1) No sidewall instability
2) No groundwater seepage encountered
3) Terminated at required depth of 3.00 mbgl
4) Excavation terminated in soft conditions

MACHINE: CASE 570T
DEPTH(m): 3
WIDTH (m): 0.80

DATE PROFILED: 21/08/2024
PROFILED BY: JPP
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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP16
X COORD (LNG): 27.69119
Y COORD (LAT): -26.63711
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Soft, TOPSOIL** Slightly moist, black, soft, open, silty clayey sand with minor grass roots, Topsoil. 0.1 m		
		Firm, Clayey ALLUVIUM Slightly moist to moist, black, firm, fissured to shattered, silty sandy clay, Alluvium. 0.5 m		
		Soft to Firm, ALLUVIUM Moist, dark grey, soft to firm, fissured, silty clayey sand, Alluvium. 0.9 m		
1		**Stiff to Firm, Fine ALLUVIUM** Moist to very moist, light grey, mottled yellow to orange and black, stiff to firm, fissured to shattered, clayey sandy silt, traces of sub-rounded gravels scattered in profile, Alluvium 2.7 m		
2		**Firm, Basal ALLUVIUM** Very moist, light grey, mottled yellow to orange, firm, fissured to shattered, sandy clayey silt, with an abundance of rounded coarse gravels to cobbles, potentially matrix supported, Basal Alluvium 2.9 m		
3		Notes: 1) Sidewall instability from 1.70 mbgl 2) Very slow groundwater seepage at 2.20 mbgl encountered 3) Terminated at 2.90 mbgl, near required depth of 3.00 mbgl due continuous sidewall collapse 4) Excavation terminated in soft conditions 5) Side wall collpase from 2.40 mbgl		
4				

MACHINE: CASE 570T
DEPTH(m): 2.9
WIDTH (m): 0.80

DATE PROFILED: 21/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP17
X COORD (LNG): 27.69572
Y COORD (LAT): -26.65220
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Slightly moist, dark brown, loose, open, silty clayey sand with minor grass roots, Topsoil. 0.3 m		
1		**Firm, ALLUVIUM** Moist, brownish grey, firm, fissured to voided, silty clayey sand, Alluvium. 1.3 m		
2		**Stiff to Firm, Fine ALLUVIUM** Moist, light grey, mottled yellow to orange and black, firm to stiff, fissured to shattered, clayey sandy silt, traces of rounded gravels scattered in profile, Alluvium 2.6 m		
3		**Firm, Fine ALLUVIUM** Very moist, light grey, mottled yellow to orange, blotched dark grey occasionally, firm, fissured to voided with slickensided surface, sandy clayey silt, with an abundance of rounded coarse gravels to cobbles at base of profile, Alluvium with potential basal alluvium below 3.00 mbgl. 3 m		
4		Notes: 1) Sidewall instability from 1.70 mbgl 2) Very slow groundwater seepage at 2.20 mbgl encountered 3) Terminated at required depth of 3.00 mbgl 4) Excavation terminated in soft conditions 5) Side wall collpase from 2.40 mbgl		

MACHINE: CASE 570T
DEPTH(m): 3
WIDTH (m): 0.80

DATE PROFILED: 21/08/2024
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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP18
X COORD (LNG): 27.67404
Y COORD (LAT): -26.63326
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Slightly moist, brown, loose, open, clayey silty sand with minor grass root, Topsoil. 0.2 m		
		Medium Dense, HONEYCOMB TO NODULAR FERRICRETE Dry to slightly moist, orange brown, mottled orange to red and black, medium dense, voided, clayey silty gravelly sand, weakly cemented iron oxide concretions and moderately cemented manganese oxide nodular concretions, Honeycomb to Nodular Ferricrete. 0.5 m		
		Medium Dense, NODULAR FERRICRETE Slightly moist to moist, light orange brown, mottled orange to red and black, medium dense, voided, silty gravelly sand, very weakly cemented iron oxide concretion and an abundance of moderately cemented, manganese oxoded nodular concretions, Nodular Ferricrete. 0.9 m		
1		**Medium Dense to Dense, RESIDUAL QUARTZITE** Slightly moist, red blotched orange red, mottled black and light orange, medium dense to dense, voided, clayey gravelly silty sand with sub-angular quartzite boulder at base of profile, interpreted as ferruginised Residual Quartzite. 1.5 m		
		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated due to slow progress approaching confined refusal. 4) Excavation terminated in soft conditions		
2				
3				
4				

MACHINE: CASE 570T
DEPTH(m): 1.5
WIDTH (m): 0.80

DATE PROFILED: 20/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP19
X COORD (LNG): 27.68000
Y COORD (LAT): -26.60685
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark reddish brown, loose, open, clayey silty sand with minor grass roots, Topsoil. 0.15 m		
		Loose, COLLUVIUM Slightly moist, reddish brown to orange brown, mottled black and red, loose, fissured to voided, clayey gravelly silty sand, slightly ferriginised Colluvium. 0.8 m		
1		**Medium Dense to Firm, NODULAR FERRICRETE** Slightly moist, orange brown to reddish brown, mottled red to orange and black, voided to open, medium dense to firm, clayey sandy gravelly silt, with an abundance of moderately to well cemented manganese oxide nodular concretions and traces of sub-angular shale fine to medium gravels, Nodular Ferricrete. 1.3 m		
2		**Firm to Stiff, Ferruginised RESIDUAL SHALE** Slightly moist to moist, brownish red to red, mottled cream to red and black, firm to stiff, slightly voided to fissured, clayey sandy silt with very weakly cemented iron oxide and manganese oxide concretions, Ferruginised Residual Shale. 3 m		
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth of 3.00 mbgl 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 3
WIDTH (m): 0.80

DATE PROFILED: 21/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

PeraGage SPECIALIST GEOCONSULTANTS

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP20
X COORD (LNG): 27.68137
Y COORD (LAT): -26.56812
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown, loose, open, silty clayey sand with minor grass roots, Topsoil. 0.3 m		
		Stiff, Clayey ALLUVIUM Moist, black to dark grey, stiff, fissured to pinholed, silty sandy clay, Alluvium. 0.6 m		
		Firm, ALLUVIUM Moist, brownish grey, occasionally mottled white, firm, open, clayey silty sand, Alluvium 1 m		
1		**Firm, Fine ALLUVIUM** Moist, light grey, occasionally mottled yellow, firm, fissured to slightly voided, sandy clayey silt with slickensided surfaces, occasional sub-rounded fine to medium gravels between 1.80 - 2.10 mbgl, Alluvium. Note: Potential pebble marker at 1.80 - 2.10 mbgl 2.1 m		
2		**Firm to Stiff, REWORKED RESIDUAL SHALE** Moist, light grey, mottled black and light orange to yellow, firm to stiff, fissured to shattered with occasional slickensided surfaces, sandy clayey gravelly silt, Reworked Residual Shale 2.7 m		
3		**EXTREMELY WEAK ROCK SHALE** Light brownish grey, stained black and red, completely weathered to highly weathered, very fine grained, intensely laminated, thinly to very thinly bedded, highly fractured, extremely weak rock, Shale 3.2 m		
4		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth. 4) Excavation terminated in soft conditions		

MACHINE: CASE 570T
DEPTH(m): 3.2
WIDTH (m): 0.80

DATE PROFILED: 19/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP21
X COORD (LNG): 27.65297
Y COORD (LAT): -26.56906
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots,Topsoil. 0.1 m		
		Medium Dense, ALLUVIUM Moist, brown, mottled black, medium dense, open, silty gravelly clayey sand, minor amounts of sub-rounded coarse gravels, Alluvium. 1.1 m		
1		**Medium Dense to Firm, PEBBLE MARKER** Moist, light orange brown, mottled black to red, medium dense to firm, open, clayey silty gravelly sand, an abundance of sub-rounded coarse gravels to cobbles, matrix supported, Pebble Marker. 1.3 m		
		Firm to Stiff, REWORKED RESIDUAL SHALE Moist, orange brown, mottled black and red, firm, fissured, clayey gravelly sandy silt, weakly cemented iron oxide and manganese oxide concretions, slightly ferruginised Reworked Residual Shale. 2.5 m		
2		**Stiff, RESIDUAL SHALE** Moist, red, mottled black and yellow, stiff, fissured, clayey gravelly sandy silt, slightly ferruginised Residual Shale 3 m		
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated due to slow progress approaching confined refusal in weak rock 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 3
WIDTH (m): 0.80

DATE PROFILED: 19/08/2024
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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP22
X COORD (LNG): 27.65732
Y COORD (LAT): -26.58712
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots, agriculturally reworked Topsoil. 0.35 m		
		Medium Dense, COLLUVIUM Slightly moist, light yellowish brown, mottled orange to red and black, medium dense, open top voided, clayey silty gravelly sand with weakly cemented manganese oxide and iron oxide concretions, slightly ferruginised Colluvium. 0.95 m		
1		**Medium Dense, Ferruginised COLLUVIUM** Moist, light yellowish brown to orange brown, mottled orange to red and black, medium dense, voided, clayey gravelly silty sand, with weakly to moderately cemented manganese oxide nodular concretions, Ferruginised Colluvium 1.8 m		
2		**Firm to Stiff, RESIDUAL SHALE** Moist, light yellowish brown, mottled black and occasionally white, firm to stiff, voided, clayey gravelly sandy silt, with very weakly, black, manganese oxide nodular concretions, ferruginised Residual Shale. 3.05 m		
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 3.05
WIDTH (m): 0.80

DATE PROFILED: 19/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP23
X COORD (LNG): 27.63895
Y COORD (LAT): -26.59943
ELEVATION:

SHEET 1 of 1

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey gravelly silty sand with minor roots, Topsoil. 0.4 m		
		Medium Dense, COLLUVIUM Dry, orange brown, mottled orange to red and black, medium dense, open to slightly voided, clayey gravelly silty sand with minor fine to medium sub-angular gravels, Colluvium. 1.3 m		
1		**Medium dense, PEBBLE MARKER** Slightly moist, orange brown, mottled orange to red and black, medium dense, open, silty clayey gravelly sand, with an abundance of sub-rounded, medium to coarse gravels to cobbles, Pebble Marker 1.5 m		
		Firm, REWORKED RESIDUAL SHALE Slightly moist to moist, orange brown, mottled black and red, firm, fissured to open, clayey gravelly sandy silt, minor moderately cemented manganese oxide nodular concretions, slightly ferruginised Reworked Residual Shale. 2.2 m		
2		**Firm to Stiff, RESIDUAL SHALE** Moist, light yellowish brown, stained orange to black occasionally blotched grey, fissured, firm to stiff, clayey sandy silt, Residual Shale 2.7 m		
		EXTREMELY WEAK ROCK SHALE Light yellowish brown, stained black, completely weathered, intensely laminated,very thinly bedded, highly to very highly fractured, extremely weak rock, Shale. 3.5 m		
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 3.5
WIDTH (m): 0.80

DATE PROFILED: 19/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP24
X COORD (LNG): 27.63888
Y COORD (LAT): -26.61349
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry, brown, loose, open, silty gravelly sand with minor grass roots and an abundance of sub-rounded to sub-angular medium to coarse gravels, Topsoil. 0.25 m		
		Dense, HARDPAN FERRICRETE Dry, dark red to dark purplish black, mottled orange to red, strongly to very strongly cemented concretions with light brown, medium dense, silty sand and sub-rounded to sub-angular coarse gravels to cobbles within the concretions, Hardpan Ferricrete. 0.6 m		
		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at confined refusal 4) Excavation terminated in intermediate conditions		
1				
2				
3				
4				

MACHINE: CASE 570T
DEPTH(m): 0.6
WIDTH (m): 0.80

DATE PROFILED: 19/08/2024
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TRIAL PIT LOG

CLIENT: WSP Africa
PROJECT: Vaal Aerotropolis EIA
PROJECT No.: GT24475G
SITE: Sedibeng District, Gauteng Province

HOLE No: TP25
X COORD (LNG): 27.64122
Y COORD (LAT): -26.63017
ELEVATION:

Depth (m)	Symbol	Description	Sample	DCP (N10) 0 5 10 15 20 25 30
		Ground Surface at		
0		**Loose, TOPSOIL** Dry to slightly moist, dark brown to brown, loose, open, clayey silty sand with minor roots, agriculturally reworked Topsoil. 0.35 m		
1		**Firm, ALLUVIUM** Slightly moist, light brownish grey, mottled yellow and black, firm, open to fissured, silty sandy clay with minor silty sand zones, Alluvium. 1.3 m		
		Stiff to Firm, ALLUVIUM Slightly moist to moist, light yellowish brown to light brown, mottled orange to red and black, stiff to firm, fissured to slightly shattered, silty clayey sand, Alluvium. 1.8 m		
2		**Medium Dense, ALLUVIUM** Moist, light yellowish brown, mottled black and occasionally blotched light grey, medium dense, fissured, clayey silty sand, Alluvium. 3.1 m		
3		Notes: 1) No sidewall instability 2) No groundwater seepage encountered 3) Terminated at required depth 4) Excavation terminated in soft conditions		
4				

MACHINE: CASE 570T
DEPTH(m): 3.1
WIDTH (m): 0.80

DATE PROFILED: 19/08/2024
PROFILED BY: JPP
CHECKED BY: KR (118640)

PeraGage SPECIALIST GEOCONSULTANTS

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Appendix B.

Trail Pit Photographs

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP01

Test Pit No: TP02

Test Pit No: TP03

Test Pit No: TP04

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP05

Test Pit No: TP06

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP07

Test Pit No: TP08

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP09

Test Pit No: TP10

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP11

Test Pit No: TP12

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP13

Test Pit No: TP14

Test Pit No: TP15

Test Pit No: TP16

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP17

Test Pit No: TP18

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP19

Test Pit No: TP20

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP21

Test Pit No: TP22

Project name: Vaal Aerotropolis Shallow Soil Assessment
Project number: GT24275G

Test Pit No: TP23

Test Pit No: TP24

Test Pit No: TP25

ANNEXURE L

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VAAL AEROTROPOLIS DESIGN (PTY) LTD

BULK WATER SERVICES REPORT

VAAL AEROTROPOLIS PROJECT

SEPTEMBER 2026

PROJECT NO: 43103108

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Vaal Aerotropolis Design (Pty) Ltd

Bulk Water Servies Report

Vaal Aerotropolis Project

Date: September 2026

Project No.: 43103108

Prepared for

Vaal Aerotropolis Design (Pty) Ltd

193 Bryanston Drive,
The Braes Office Park Project Hous,
Bryanston, Gauteng,
2191

Submitted to

Vaal Aerotropolis Design (Pty) Ltd

193 Bryanston Drive,
The Braes Office Park Project Hous,
Bryanston, Gauteng,
2191

Prepared by

WSP Group Africa (Pty) Ltd
Building 1, Maxwell Office Park,
Magwa Cres, Midrand,
1685

Quality control	Name	Date	Signature
Prepared by:	WSP Engineering Project Team	11 Sept 2026	
Reviewed by:	Kosikee Emma-Iwuoha (Pr.Eng) Civil Engineer	11 Sept 2026	
Approved by:	John Rammutla (Pr.Eng) Project Manager	11 Sept 2026	

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2	2026-05-20	Updates to the report
3	2026-06-25	Updates to the report
4	2026-09-09	Updates to the report (borehole information)

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Abbreviations and Glossary

Abbreviations

Abbreviation	Description
AADD	Average Annual Daily Demand
E. coli	Escherichia coli
ELM	Emfuleni Local Municipality
GAADD	Gross Annual Average Daily Demand
HDPE	High-Density Polyethylene
kL	Kilolitres
kL/day	Kilolitres per Day
l/s	Litres per Second
m	Metres
m^3/day	Cubic Metres per Day
m/s	Metres per Second
ML/day	Megalitres per Day
mm	Millimetres
PFD	Process Flow Diagram
PF	Peak Factor
SANS	South African National Standards
SCADA	Supervisory Control and Data Acquisition
TBC	To Be Confirmed
TCB	Total Coliform Bacteria
uPVC	Unplasticised Polyvinyl Chloride
UV	Ultraviolet
WSDP	Water Services Development Plan
WTW	Water Treatment Works
Ø	Diameter

Executive Summary

The Vaal Aerotropolis development represents a large-scale, multi-phased infrastructure initiative requiring a reliable and resilient bulk water supply system to support the airport, associated commercial precincts, trade zones, and agricultural developments. The proposed bulk water services strategy has been developed to respond to both the immediate requirements of the early development phases and the long-term operational demands of the fully established Aerotropolis.

A key constraint informing the water services approach is the limited capacity of the existing municipal water supply system within the Emfuleni Local Municipality. Current infrastructure challenges, including capacity limitations, aging assets, and operational constraints, restrict the ability of the municipality to provide additional bulk supply to new developments.

In response, a phased and self-sustaining water supply strategy has been adopted. During the initial phases of development, potable water supply will be secured primarily through groundwater abstraction from strategically located boreholes within or near the site.

As the development progresses, the ultimate long-term solution envisages integration with a regional bulk water supply system via a dedicated pipeline connection to Rand Water. This infrastructure will be implemented to provide a secure, high-capacity supply capable of supporting full development demand while improving system resilience and redundancy.

The bulk water system has been designed to align with a phased development framework, ensuring that infrastructure investment is incremental, cost-effective, and scalable. Each phase introduces additional abstraction, treatment, storage, and distribution capacity, allowing the system to grow in parallel with demand while minimising upfront capital expenditure.

The proposed system incorporates:

- Groundwater abstraction and treatment for early phase supply
- Progressive expansion of bulk conveyance infrastructure
- Storage and pressure management facilities designed for operational resilience
- Integration of backup supply systems to ensure continuity of service
- Compliance with applicable potable water standards and regulatory requirements

A strong emphasis has been placed on sustainability and operational reliability, including protection of groundwater resources and provision of emergency storage to maintain supply during system disruptions.

Overall, the bulk water services strategy provides a practical and technically robust solution that addresses immediate constraints while enabling long-term expansion, ensuring that the Vaal Aerotropolis development is supported by a dependable and future-ready water supply system.

1. Introduction

1.1 Background

The successful implementation of the Vaal Aerotropolis is fundamentally dependent on the provision of a secure, scalable, and resilient bulk water supply system. Given the scale and complexity of the proposed development, conventional reliance on existing municipal infrastructure is neither feasible nor sufficient to support the projected demand. This necessitates the development of an independent, phased bulk water services strategy that is capable of supporting early-stage development while transitioning to a fully integrated regional supply solution over the long term.

The Vaal Aerotropolis development is currently being implemented as part of a structured, phased land and infrastructure development programme. The preparation of bulk engineering services, including water supply infrastructure, forms a critical component of enabling the proposed development and ensuring that services are aligned with the latest concept masterplan.

The purpose of the bulk water services planning is to assess the availability, capacity, and suitability of water supply solutions required to support the full development lifecycle, while establishing appropriate design criteria and infrastructure strategies for implementation.

The development is located within the jurisdiction of the Emfuleni Local Municipality, where the existing water services environment is characterised by significant operational and infrastructure constraints. These include:

- Limited available storage capacity within the bulk supply system
- Aging infrastructure requiring rehabilitation or replacement
- Operational inefficiencies and water losses within the network
- Inability to extend services to new developments in the short to medium term

In addition, the current configuration of the municipal supply network, including reliance on existing reservoirs and transmission corridors, limits the ability to supply areas west of the N1, where the Aerotropolis development is located.

As a result of these constraints, it is not feasible for the development to rely on municipal bulk water supply during the initial phases. An alternative approach has therefore been adopted, involving the development of independent bulk water infrastructure to service the Aerotropolis.

The proposed approach is based on:

- Short- to medium-term supply through groundwater abstraction via boreholes
- Medium- to long-term augmentation through connection to a regional bulk supply system (Rand Water) via a dedicated pipeline
- Phased infrastructure rollout, aligned to development sequencing and demand growth

- Integrated treatment, storage, and distribution systems designed for flexibility and expansion

The adoption of this approach ensures that the development is not constrained by existing municipal limitations while still allowing for future integration into the broader regional water supply network.

Furthermore, the bulk water services strategy has been developed in alignment with applicable planning frameworks and regulatory requirements. This includes adherence to national water quality standards for potable supply, as well as consideration of long-term sustainability, including groundwater resource protection and efficient system operation.

In summary, the background to the bulk water services planning is defined by:

- Significant limitations within the existing municipal supply system
- The strategic requirement to enable large-scale development in a constrained service environment
- The need for a phased, self-sufficient, and ultimately integrated bulk water supply solution

This context underpins the development of a robust bulk water services strategy capable of supporting the Vaal Aerotropolis throughout its full development horizon.

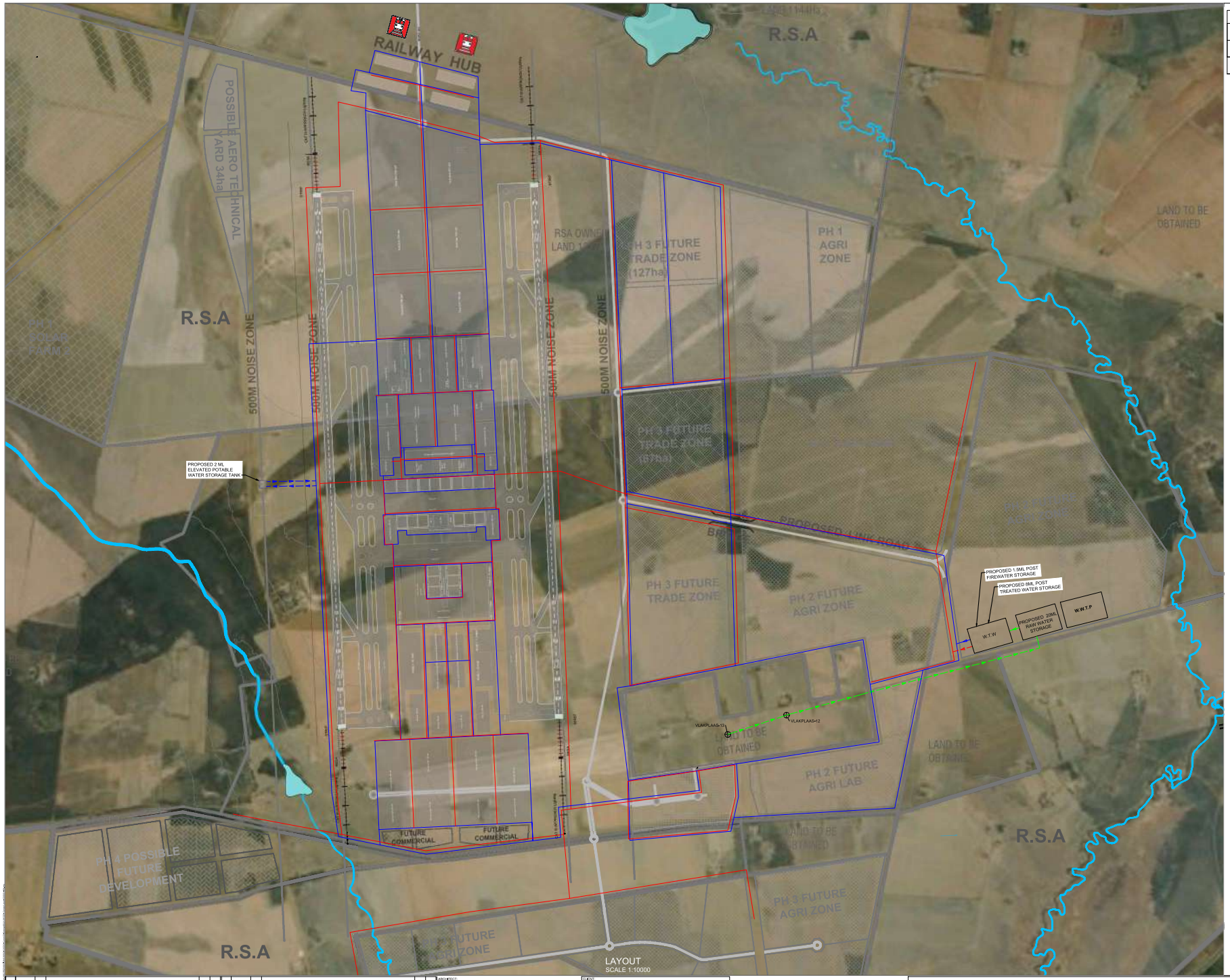
1.2 Proposed Location of the WTW and Associated Storage Facilities

The location of the proposed water treatment works within the Vaal Aerotropolis development is illustrated in the figure below. This position has been identified as a provisional arrangement, informed by the current understanding of the precinct's spatial planning and infrastructure layout.

It should be noted that the final, optimised location of the WTW and associated storage infrastructure will be confirmed during the detailed design phase, once additional information becomes available. In particular, the outcomes of the borehole stress testing and comprehensive hydraulic analyses will guide the refinement of the plant positioning to ensure optimal operational efficiency and system integration.

Figure 1: Location of the WTW

Refer to next page.



LEGEND	
PROPOSED POTABLE PIPELINE	
PROPOSED FIRE WATER PIPELINE	
PROPOSED RAW WATER ABSTRACTION PIPELINE	

REV	DATE	BY	DESCRIPTION	CHK	APD
A	22/06/2026	KD	BULK WATER AND FIRE WATER CONCEPT LAYOUT	KE	KE

REV	DATE	BY	DESCRIPTION	CHK	APD

ARCHITECT:

CLIENT:

DRAWING STATUS: A signed version of construction drawings are available in electronic format at the WSP office of origin as well as at the WSP office of issue

VAAL AEROTROPOLIS CONCEPT LAYOUT PLAN

BULK WATER & FIRE WATER PROPOSED LAYOUT - AEROTROPOLIS PRECINCT

SCALE:	CHECKED:	APPROVED:
1:10 000	KE	KE
DESIGN: KD	DRAWN: KD	DATE: 2026/09/02
PROJECT No: 43103108	DRAWING No: 43103108 - 001	REV: B

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2. Design Standards & Best Practice

2.1 Civil Design: Onsite Water Supply

The applicable standards and guides are as follows:

- SANS 2001-DP2: 2010: Construction Works – Medium Pressure Pipelines
- SANS 241-1: 2015: Drinking Water Standards
- SANS 1200: Standard Specifications for Civil Engineering Construction
- SANS 10252: Water Supply and Drainage for buildings
- SANS 10400: National Building Regulations:
    - Part W: Fire Installations
- The Neighbourhood Planning and Design Guide. Red Book, Section J: Water Supply (2019)
- Technical Guidelines for the Development of Water & Sanitation Infrastructure. Second Edition, 2004.
- Department of Water Affairs & Forestry (DWAF)
- Applicable Municipal standards and regulations, including, inter alia:
    - Water Services Development Plan
    - Master Plans
    - Municipal Engineering Design Standards
    - Municipal By-Laws

3. Water Design Characteristics

3.1 Water Design Criteria

The bulk water system has been developed in accordance with defined design criteria that establish the hydraulic, operational, and performance requirements for the overall network. These criteria provide the basis for sizing of infrastructure components, pressure management, storage provision, and system reliability, ensuring that the water supply system is capable of meeting both peak demand conditions and long-term operational requirements. The water design criteria are informed by the Neighbourhood Planning and Design Guide (Red Book) and the Technical Guidelines for the Development of Water & Sanitation Infrastructure, as referenced in Section 2. The design criteria adopted for the Vaal Aerotropolis are summarised in Table 3.1 below.

Table 3.1 Water Design Criteria

Item No.	Design Element	Criteria
1	Average Annual Daily Demand (AADD) for Aerotropolis sites	Refer to Table 3.2 below
2	Gross Annual Daily Demand (GAADD)	Allow 10% for losses
3	Peak Factor (PF)	Refer to Table 3.2 below
4	Maximum Static Head	90 m
5	Minimum residual head under conditions of domestic peak flows	20 m
6	Maximum linear flow velocity under conditions of domestic peak flows	1.5 m/s
7	Pipe Type	Mild steel for Bulk Rand Water supply pipeline and HDPE pipe for internal bulk water pipeline
8	Minimum pipe class	Pressure rating of 16
9	Fire flow under the conditions of domestic peak flow	100 l/s
10	Maximum linear flow velocity under conditions of firefighting	3.5 m/s
11	Available static head	TBC
12	Available dynamic head under fire flow conditions	TBC
13	Minimum pipe diameter	110 mm

The design of the bulk water system is guided by the following principles:

1. **Sustainability:**

Groundwater abstraction will not exceed the sustainable yield of the aquifer. The boreholes should be assessed under a 72-hour step stress test to determine the optimised yield for sustainability. The stress test has been assessed on 5 boreholes, and the results is documented on this report on its viability for water supply within the development.

Measures will be implemented to recharge the aquifer where feasible, such as stormwater infiltration systems. The stormwater infiltration system is currently being assessed to support the sustainability of recharging the aquifer.

2. **Scalability:**

The infrastructure is designed for phased expansion, minimizing initial costs while allowing seamless upgrades for phased approach of the development.

3. **Redundancy:**

Once bulk supply is established through Rand Water, the boreholes will be utilised as backup boreholes to ensure uninterrupted water supply in the event of equipment failure. There is also a minimum 48-hour emergency storage should water supply be affected for a prolonged period.

4. **Compliance:**

All components of the system meet the SANS 241 standards for potable water and comply with local municipal regulations, as referred to in Section 2.

5. **Operational Efficiency:**

Automated controls and metering will optimize water usage and reduce operational costs.

3.2 Projected Water Demand

Water demand has been estimated based on the land use and occupancy characteristics of each zone, factoring in peak demand scenarios and future growth. The demand for each phase is summarized as follows:

Table 3.2 Projected Water Demand for Land Uses (Potable Water Demand)

Detailed Land Use	Annual Average Daily Demand (AADD)	Phase 1	Phase 2	Phase 3
		Water Demand (kL/day)	Water Demand (kL/day)	Water Demand (kL/day)
Airport	25 l/passenger/day	493	1 712	3082
Hospital	1 kL/100m²/day	80	80	80
Hotel Park	1 kL/100m²/day	68	68	68
Shopping World	0.65 kL/100m²/day	306	306	306
Office Park	0.65 kL/100m²/day	483	483	483
Head Office	0.65 kL/100m²/day	54	54	54
Conference Centre	0.65 kL/100m²/day	44	44	44
Trade Zones	10 kL/ha/day	360	810	2815
Security House	0.3 kL/unit	2	2	2
	Total Potable AADD	**1 890**	**3 559**	**6 934**
	Conveyance Losses	10%	10%	10%
	Treatment Losses	10%	10%	10%
	Total GAADD	**2 268**	**4 271**	**7 627**
	Peak Factor	1,5	1,5	1,5
	Total Peak Hour Demand	**3 402**	**5 873**	**11 441**

Table 3.3 Projected Water Demand for Agriculture Uses (Non-Potable Water Demand)

Detailed Land Use	Annual Average Daily Demand (AADD)	Phase 1	Phase 2	Phase 3
		Water Demand (kL/day)	Water Demand (kL/day)	Water Demand (kL/day)
Agri-Lab	6 kL/ha	-	393	393
Agrizones	12 kL/ha	4 267	5 365	4 713
	Total Non-Potable	**4 267**	**5 758**	**5 106**

At this stage of the planning process, the specific agricultural activities and corresponding water requirements within the proposed Agrizone have not yet been defined. Consequently, it is not possible to accurately determine the anticipated water demand or the required water quality standards for agricultural use. For the purposes of this assessment, an indicative agricultural water demand has been estimated using the guidelines and planning parameters contained in the "*The Neighbourhood Planning and Design Guide (Red Book)*" . This estimate may be refined during subsequent planning and design stages once the intended agricultural land uses are confirmed.

In accordance with common agricultural practice and prevailing development models, the provision of water for agricultural activities is expected to be sourced from private boreholes and managed by the individual farmers/users and through separate WULA applications. As the agricultural water supply will not form part of the municipal or bulk water supply system, water demands associated with agricultural activities have been excluded from the bulk water supply analysis presented in this report.

3.2.1 Capacity of the WTW

The projected potable water demands for the Vaal Aerotropolis development have been estimated at approximately 3.5 ML/day for Phase 1, increasing to 6.5 ML/day in Phase 2 and 14.7 ML/day in Phase 3 as the precinct develops.

In line with a phased infrastructure delivery approach, the initial sizing of the Water Treatment Works (WTW) has been based on accommodating the Phase 1 demand requirements. Hence, the size of the WTW is 3.5 ML/day.

3.2.2 Bulk Water Supply from Rand Water to Site

The Phase 2 and 3 water demand for the Vaal Aerotropolis development is intended to be supplied through integrating into Rand Water's A20 augmentation pipeline anticipated to be comissioned in 2034. This is dependent on Rand Water's pipeline coming online on schedule.

From the reviewed information available of existing infrastructure, it is proposed to connect at the Langerand Reservoir site. The bulk pipeline will be approximately 24.5 km from the Langerand reservoir site to the Vaal Aerotropolis storage facilities.

Preliminary investigations indicate that the bulk supply line can be a gravity pipeline to the Vaal Aerotropolis site. The figure below shows the indicative pipeline route together with the existing ground elevations along the proposed pipeline route.

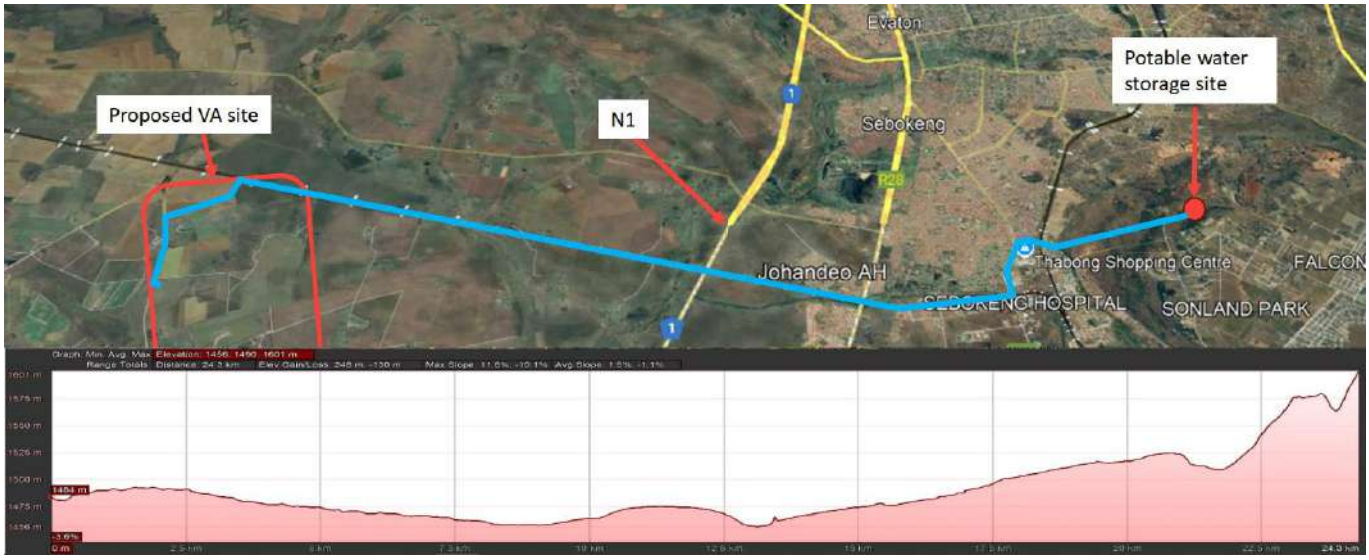


Figure 2: Proposed Pipeline Route from Langerand Reservoir Site to Vaal Aerotropolis

3.2.3 Projected Water Demand During Construction Phase

During the construction phase of the proposed 3.5 ML/day water treatment package plant, a temporary water supply will be required to support various construction activities, including concrete mixing and curing, dust suppression, equipment cleaning, hydrostatic testing, and domestic use by construction personnel. In the absence of detailed contractor information at this stage, a preliminary estimate has been adopted based on industry rule-of-thumb allowances. A construction water demand of 100 kL/day (0.1 ML/day), equivalent to approximately 3% of the ultimate treatment plant capacity, has been assumed. This allowance is considered sufficient for planning purposes and will be refined during the detailed design and construction planning phases once the contractor's methodology and programme have been established.

3.2.4 Water Source

The bulk water supply system, for Phase 1, will be primarily sourced from high-yield boreholes located within or near the development area. A geohydrological assessment, conducted by PRISM EMS, was carried out to determine the yield of the boreholes and identify the high yield boreholes for detailed assessment.

The study, as referred to in **Appendix C**, indicates that groundwater is present within the underlying fractured aquifer system and that the area exhibits potential for further groundwater development. While the five test boreholes yielded a combined sustainable abstraction rate of approximately 276 kL/day, the results demonstrate the presence of productive water-bearing fracture zones. Based on the hydrogeological setting, it is considered reasonable that additional boreholes, strategically sited and drilled to approximately 100 m depth, may encounter similar fracture systems and achieve comparable high yields.

The groundwater quality analysed are deemed moderate/fair and may be treated on-site for potable use. The treatment process should include chlorination and ultraviolet light treatment due to the detection of E. coli and Total Coliform Bacteria. There are some outliers detected from the results which have been

identified to have higher Iron, Magnesium, Nitrate and Nitrite content. The table below shows the initial yield results reported.

Table 3.4 Initial Yield Test Results

Borehole no.	100% Yield (kl/day)	95% Yield (kl/day)	90% Yield (kl/day)	85% Yield (kl/day)	80% Yield (kl/day)	75% Yield (kl/day)
VP2	480	456	432	408	384	360
VP3	173	165	156	147	139	130
VP4	36	34	32	31	29	27
VP5	36	34	32	31	29	27
VP6	72	68	65	61	58	54
VP7	135	128	122	115	108	101
VP8	480	456	432	408	384	360
VP14	179	170	161	153	144	135
VP22	58	55	52	49	46	43
VP25	60	57	54	51	48	45
VP30	60	57	54	51	48	45
VP31	135	128	122	115	108	101
VP32	36	34	32	31	29	27
VP33	36	34	32	31	29	27
VP35	36	34	32	31	29	27
Total	**2012**	**1912**	**1811**	**1711**	**1610**	**1509**

Further to the initial yield testing results, a detailed 72-hour step test assessment has been conducted on five boreholes, and the results are shown in the table below:

Table 3.5 72-Hour Step Test Yield Results

Borehole No.	1	2	3	4	5	Total	Units
Borehole Name	2	3	8	14	24		
Depth (m)	31,1	35	58,4	34,26	60,3		
Flow (l/s)	2	1	5,82	0,8	2,56	12,18	l/s
Flow (l/hr)	7 200	3 600	20 952	2 880	9 216	43 848	l/hr
FC Recommendations (DWS) (l/hr)	3 096	1 944	12 168	1 584	4 176	22 968	l/hr
FC Recommendations (DWS) (kl/day) [12 hours]	37	23	146	19	50	**276**	**kl/day**

The 72-hour step-test assessment undertaken on five boreholes demonstrated a combined sustainable yield of approximately 276 kL/day. Based on this yield, a total of 8 to 12 additional boreholes are estimated to be sufficient to provide the required 2079kl/day. This is supported by the results of the hydrogeological study.

3.2.5 Fire Water Demand and Storage Requirements

The determination of firefighting water demand for the Vaal Aerotropolis is guided by the Guidelines for Human Settlement Planning and Design (Red Book), specifically the provisions for fire flow requirements and duration of supply. The applicable fire demand is a function of both the fire-risk classification of the development and the duration of the design fire event.

3.2.5.1 Fire Risk Classification and Design Flow

Based on the anticipated land use within the Vaal Aerotropolis, which includes industrial, logistics, commercial, and high-activity precincts, the development is conservatively classified as High Risk, consistent with Red Book definitions for CBD and high-risk industrial areas.

The corresponding design criteria for fire flow are summarised in Table 3.5 below.

Table 3.6 Design Criteria for Provision of Fire Flow (Red Book Table J.17)

Risk Classification	Total Fire Flow (L/s)	Minimum Flow per Hydrant (L/s)	Minimum Pressure at Fire Node (m)	Minimum Pressure at Rest of System (m)
High Risk (CBD and high-risk industrial)	100	25	15	5
Moderate Risk 1 (Industrial, business, high-rise ≥ 4 storeys)	50	25	15	5
Moderate Risk 2 (Cluster, low-income housing, ≤ 3 storeys)	25	25	10	5
Low Risk (Single residential)	15	15	10	5

In line with the High Risk classification, a design fire flow of 100 L/s has been adopted for the Vaal Aerotropolis.

3.2.5.2 Duration of Fire Flow Event

The duration of supply is determined independently based on fire risk categories. The Red Book recommendations are provided in Table 3.6 below.

Table 3.7 Design Criteria for Provision of Fire Flow (Red Book Table J.17)

Fire Risk Category	Duration of Design Fire Flow (hours)
High Risk	6
Moderate Risk 1	4
Moderate Risk 2	2

Fire Risk Category	Duration of Design Fire Flow (hours)
Low Risk	1

While the development is classified as High Risk for flow capacity, a Moderate Risk 1 duration of 4 hours has been adopted. This approach reflects a balanced and pragmatic design assumption, taking into account operational firefighting response times, likely fire containment scenarios, and storage optimisation considerations typically applied in large-scale mixed-use developments.

3.2.5.3 Firefighting Storage Requirements

The required dedicated storage volume for firefighting is calculated as follows:

$$\text{Storage Volume} = \text{Fire Flow} \times \text{Duration}$$

Where:

- Fire Flow = 100 L/s
- Duration = 4 hours (14,400 seconds)
  - Storage Volume $= 100\ \text{L/s} \times 14{,}400\ \text{s} = 1{,}440{,}000\ \text{L}$
  - Storage Volume $\approx \mathbf{1.44\ ML} \approx \mathbf{1.5\ ML}$

Accordingly, a dedicated firefighting storage capacity of 1.5 ML is required. This volume is to be provided in addition to potable and operational storage, ensuring that firefighting demand does not compromise the continuity of normal water supply.

3.2.6 Water Treatment and Storage

Each phase will include the installation of water treatment facilities designed to meet the demand for that phase.

Treatment Process:

- Phase 1: Installation of water treatment systems to treat groundwater abstracted to the required potable water standards.
- Phase 2: Expansion to include additional capacity throughout the treatment plant to increase the overall plant capacity to accommodate phase 2.
- Phase 3: Final upgrades with increased capacity to the WTW to accommodate the ultimate development and surrounding areas.

Storage Facilities:

Reservoirs will be constructed in phase 1 to provide storage capacity equivalent to a minimum of 48 hours of water demand.

- Phase 1: Reservoir with a capacity of 20 000 m³ raw water storage with a 8 000 m³ to serve the airport, initial trade zones and airport city. A 2 000 m³ tower is needed for adequate pressure supply. An additional 1500 m³ reservoir for fire fighting.
- Phase 2: An additional 5 000 m³ reservoir to serve the increased airport demand and railway hub.
- Phase 3: An additional 8 200 m³ reservoir to serve the agricultural zones and increased airport demand

3.3 Bulk Water Distribution System

The distribution system will be constructed incrementally, aligned with the phased approach to development.

3.3.1 Phase 1 Distribution Network

- Primary pipelines of 90mm Ø will connect multiple boreholes which come together into one bulk water supply pipeline (250mm Ø) to the treatment plant and the airport.
- A booster pump station will be installed to maintain pressure for transferring bulk treated water to the storage zones.
- Initial pipelines will include provisions for future connections to the Phase 2 network.

3.3.2 Phase 2 Distribution Network

- Extension of the primary pipeline network to the airport city and railway hub.
- Installation of additional booster pump stations to ensure consistent pressure.
- Integration of metering stations for zone-specific monitoring and demand management.

3.3.3 Phase 3 Distribution Network

- Final expansion of the pipeline network for the ultimate development.
- Final pump installations and adjustments to handle the full development demand.
- Implementation of a SCADA system for real-time monitoring and control of the entire water distribution network.

Refer to **Appendix A** for the proposed bulk water distribution network layout plan.

3.4 Summary of Bulk Storage and Distribution System

The table below shows a summary of the bulk storage and distribution system required for Phase 1 of the development.

Table 3.8 Bulk Storage Requirements Summary

Storage Requirements	Phase 1	
	Capacity	Unit
Raw Water Storage	20	ML
Treated Water Storage	8	ML
Elevated Tower	2	ML
Firewater Storage	1.5	ML

Table 3.9 Bulk Distribution Requirements Summary

Storage Requirements	Phase 1	
	Size	Unit
Primary Pipelines	90	mm Ø
Bulk Pipelines	250	mm Ø
Booster pump station	TBC	TBC

3.5 Management of Waste Streams for the WTW

During the operation of the proposed Vaal Aerotropolis Water Treatment Works (WTW), residuals will be generated as part of the treatment process. These predominantly comprise sludge from sedimentation and wash water from filter backwashing processes.

The sedimentation process will produce sludge consisting of settled suspended solids removed during clarification. This sludge will be appropriately managed through initial thickening and dewatering processes, following which it will be transported to a suitably licensed landfill facility for disposal, in accordance with applicable environmental regulations and waste management requirements.

In addition to sludge generation, the filtration process will produce backwash (wash water) during routine cleaning of filters. The management and treatment strategy for backwash water will be further developed and confirmed during the detailed design phase, taking into consideration options such as recovery, recycling within the treatment process, or appropriate discharge in compliance with regulatory standards.

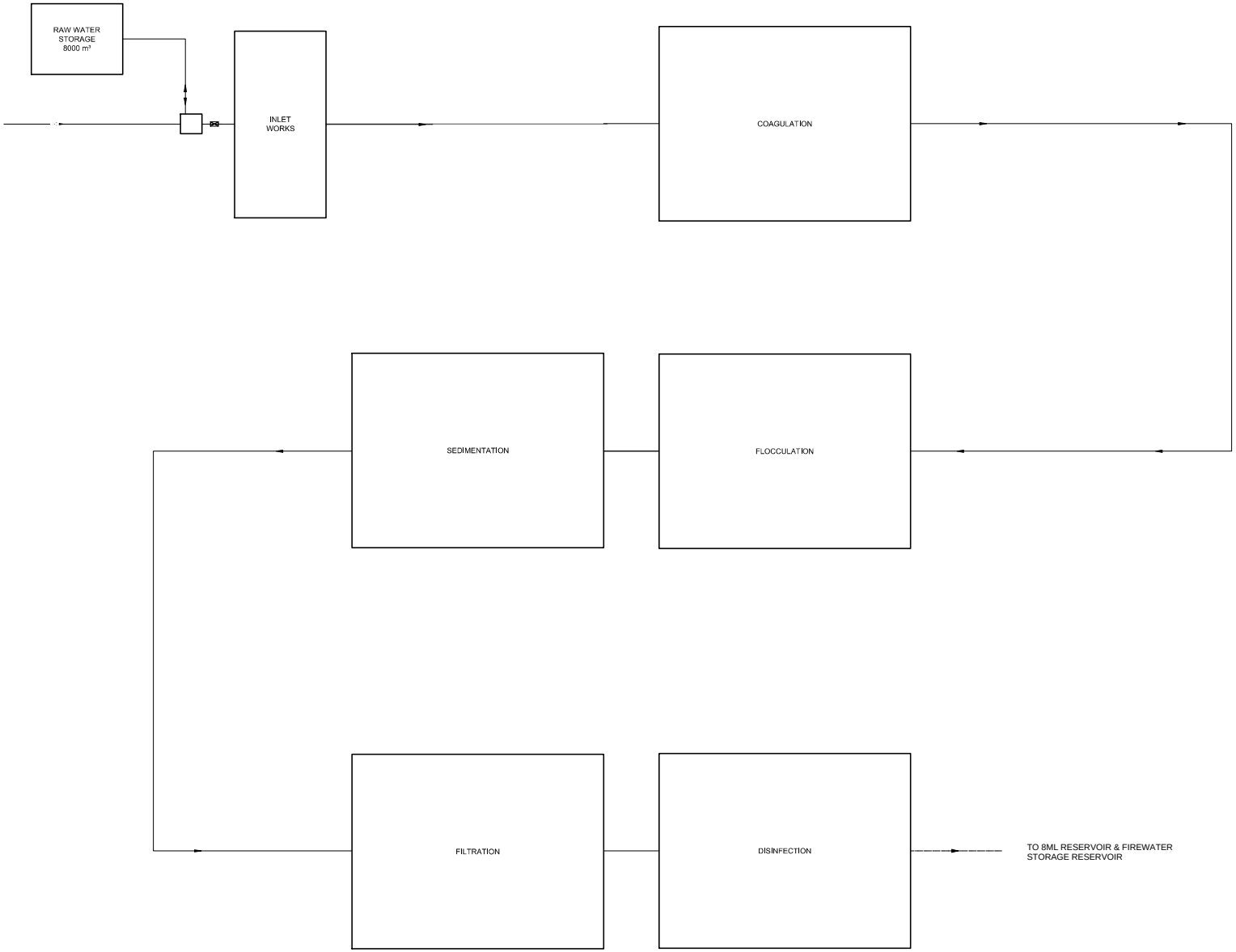
4. Water Treatment Works Process Design

4.1 Design Process Flow Diagram

The proposed process flow diagram (PFD) for the proposed water treatment works is presented below. The diagram illustrates the overall treatment philosophy, with each unit process providing a defined and complementary role in achieving potable water quality. The treatment train has been configured to progressively remove physical, chemical, and microbiological contaminants, ensuring robustness and operational flexibility in response to varying raw water conditions.

Figure 3: Process Flow Diagram

Refer to next page.



REV	DATE	BY	DESCRIPTION	CHK	APD
A	16-05-2025	JN	FOR INFORMATION	JN	DC

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CLIENT: VAAL AEROZONE

DRAWING STATUS: INFORMATION

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WSP Group Africa (Pty) Ltd
Transportation and Infrastructure
The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: WATER TREATMENT WORKS CONCEPTUAL PROCESS FLOW DIAGRAM

SCALE :	CHECKED:	APPROVED:
NTS	JN	DC
DESIGN:	DRAWN:	DATE:
JN	JN	2025/05/16
PROJECT No:	DRAWING No:	REV:
43103108	43103108-VAD-WSP-SW-ZZ-DR-AW-SM0001	A

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4.2 High-Level Process Description

The treatment system comprises of the following key stages, as aligned to the process flow diagram:

4.2.1 Raw Water Storage

The treatment process is initiated with raw water storage, which provides an operational buffer between the source and the treatment works. This storage allows for the regulation of inflows, dampening fluctuations in both quantity and quality of raw water supply. In addition, it enhances resilience by providing a degree of emergency storage and enabling more stable downstream process control.

4.2.2 Inlet Works

From storage, raw water is conveyed to the inlet works, where flow control and distribution across the treatment units is established.

4.2.3 Coagulation

Following screening, the water enters the coagulation stage, where chemical coagulants are dosed into the flow. The purpose of this process is to destabilise colloidal particles and fine suspended solids that are otherwise resistant to gravitational settling. Rapid mixing ensures effective dispersion of the coagulant and promotes particle destabilisation, creating the conditions necessary for subsequent floc formation.

4.2.4 Flocculation

The coagulated water is then transferred to the flocculation stage, where controlled, gentle mixing facilitates the aggregation of destabilised particles into larger flocs. This process increases particle size and mass, improving their settleability in downstream sedimentation units. The flocculation stage is critical in optimising the performance of the clarification process.

4.2.5 Sedimentation

The flocculated water enters sedimentation basins, where gravity-driven separation allows the formed flocs to settle out of suspension. This process removes the bulk of suspended solids and significantly reduces turbidity. Settled sludge is extracted and managed separately, while clarified supernatant flows forward to the filtration stage.

4.2.6 Filtration

Post-sedimentation, the clarified water is subjected to filtration, which acts as a polishing step to remove residual fine particles and remaining suspended matter. Filtration ensures that turbidity is reduced to levels suitable for effective disinfection and compliance with potable water standards. This stage is essential in safeguarding downstream processes and ensuring final water quality consistency.

4.2.7 Disinfection

The filtered water undergoes disinfection to inactivate pathogenic microorganisms and ensure microbiological safety. This process also establishes a residual disinfectant concentration, which is necessary to maintain water quality throughout storage and distribution.

4.2.8 Treated Water Storage and Distribution

Finally, the treated water is conveyed to a potable water reservoir (noted as an approximately 8 ML storage), which provides balancing storage for the distribution network. This reservoir supports peak demand management, pressure stabilisation, and ensures continuity of supply. It also forms a critical interface between the treatment works and the downstream reticulation system.

Refer to **Appendix B** for the proposed bulk water typical details.

5. Conclusion

The proposed bulk water services strategy provides a phased, scalable and resilient approach to meeting the potable water requirements of the Vaal Aerotropolis. The strategy responds to the limited capacity of the existing municipal water supply system by establishing an independent groundwater-based supply for the initial development, followed by progressive integration with a regional bulk water supply from Rand Water as the Aerotropolis expands. This approach allows treatment, storage and distribution infrastructure to be implemented incrementally and aligned with the development programme and confirmed water demand.

During Phase 1, potable water will primarily be supplied from boreholes located within or near the development. Raw groundwater will be conveyed through approximately 90 mm diameter collector pipelines into an approximately 250 mm diameter bulk pipeline leading to the proposed 3.5 ML/day Water Treatment Works. The treated water will supply the airport, initial trade zones and airport city, supported by approximately 20 ML of raw water storage, 8 ML of treated water storage, a 2 ML elevated water tower for pressure management and 1.5 ML of dedicated firefighting storage.

During Phase 2, the Water Treatment Works, storage facilities and distribution network will be expanded to accommodate increased demand associated with the growing airport precinct, airport city and railway hub. This will include approximately 5 ML of additional storage, extensions to the pipeline network, additional booster pumping where required and zone-specific metering to support pressure control and demand management. The principal long-term supply is intended to be provided through a connection to Rand Water's A20 augmentation system, using a dedicated bulk pipeline of approximately 24.5 km from the Langerand Reservoir site to the Aerotropolis. The feasibility of gravity conveyance and the final pipeline configuration must be confirmed through detailed hydraulic modelling, route evaluation and confirmation of available supply conditions. The implementation of this phase will also depend on the commissioning of the Rand Water augmentation infrastructure and the conclusion of the necessary technical, commercial, land, environmental and regulatory arrangements.

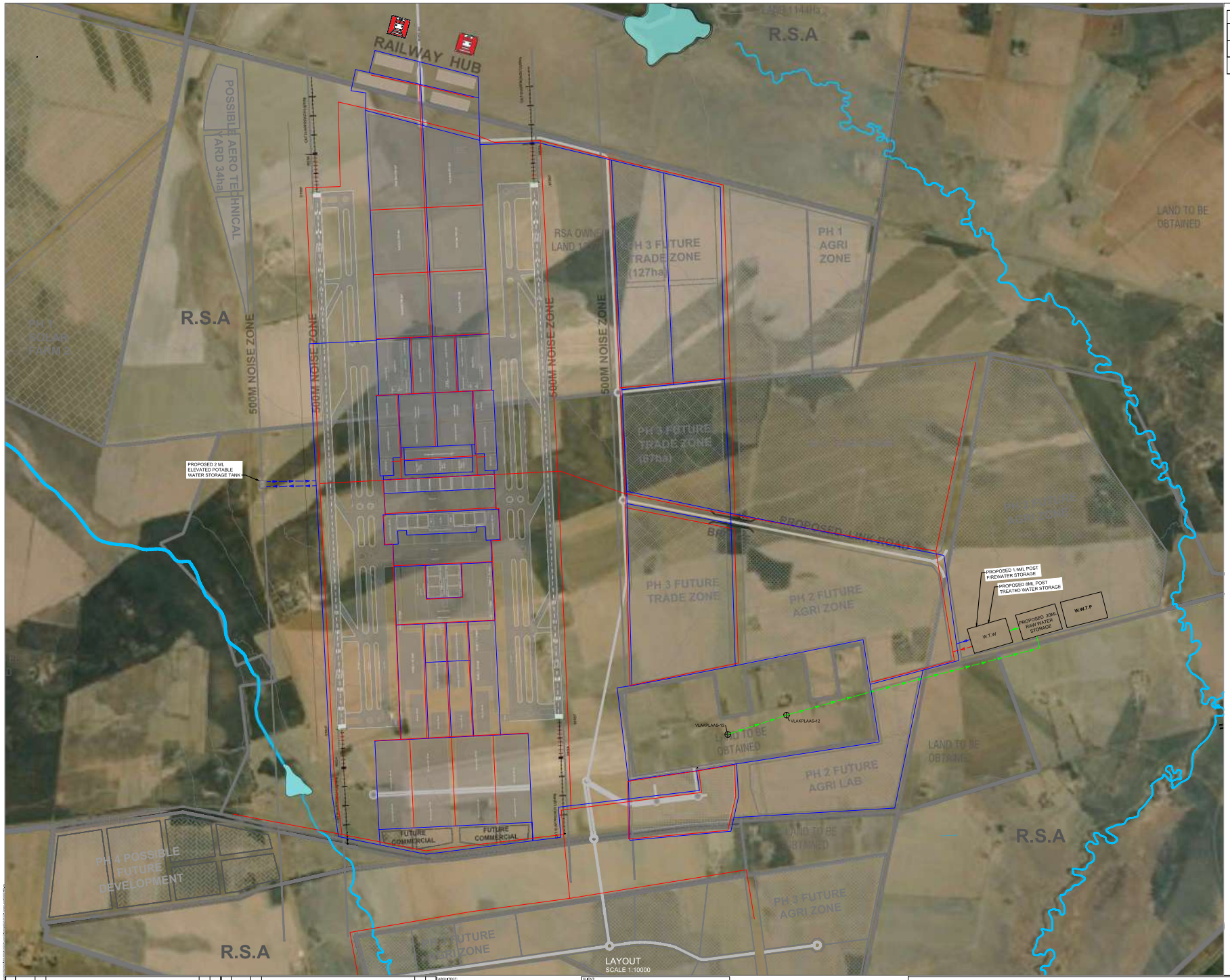
Phase 3 will complete the expansion of the system to accommodate the ultimate development demand. This phase will include the final increase in treatment capacity, approximately 8.2 ML of additional storage, extension of the bulk distribution network throughout the remaining development areas, final pump installations and implementation of a Supervisory Control and Data Acquisition system for real-time monitoring and control. Rand Water is expected to serve as the principal bulk supply source during the ultimate development condition, while the established borehole infrastructure may be retained as a supplementary or backup source, subject to sustainable abstraction limits and the relevant water-use authorisations. This combined-source arrangement will improve operational flexibility, redundancy and continuity of supply.

Overall, the proposed concept provides a technically appropriate framework for delivering a dependable and expandable bulk water supply system for the Vaal Aerotropolis. Phase 1 establishes the initial groundwater-based system, Phase 2 introduces expanded infrastructure and the planned Rand Water connection, and Phase 3 completes the system for the ultimate development.

A

Appendix A

Appendix A – Proposed Bulk Water Distribution Layout Network



LEGEND	
PROPOSED POTABLE PIPELINE	
PROPOSED FIRE WATER PIPELINE	
PROPOSED RAW WATER ABSTRACTION PIPELINE	

REV	DATE	BY	DESCRIPTION	CHK	APD
A	22/06/2026	KD	BULK WATER AND FIRE WATER CONCEPT LAYOUT	KE	KE

REV	DATE	BY	DESCRIPTION	CHK	APD

ARCHITECT:

CLIENT:

DRAWING STATUS: A signed version of construction drawings are available in electronic format at the WSP office of origin as well as at the WSP office of issue

VAAL AEROTROPOLIS CONCEPT LAYOUT PLAN

BULK WATER & FIRE WATER PROPOSED LAYOUT - AEROTROPOLIS PRECINCT

SCALE:	CHECKED:	APPROVED:
1:10 000	KE	KE
DESIGN: KD	DRAWN: KD	DATE: 2026/09/02
PROJECT No: 43103108	DRAWING No: 43103108 - 001	REV: B

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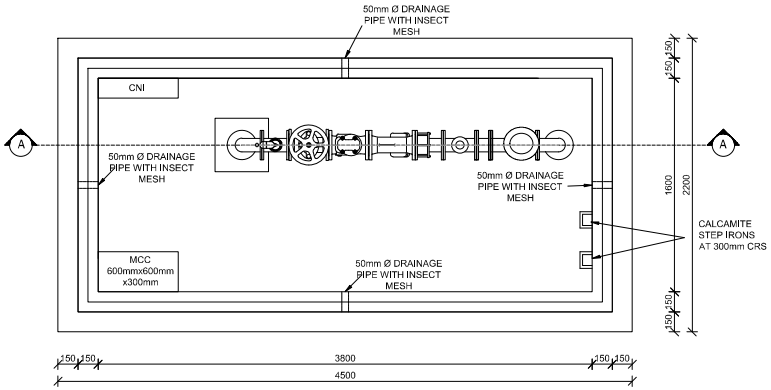
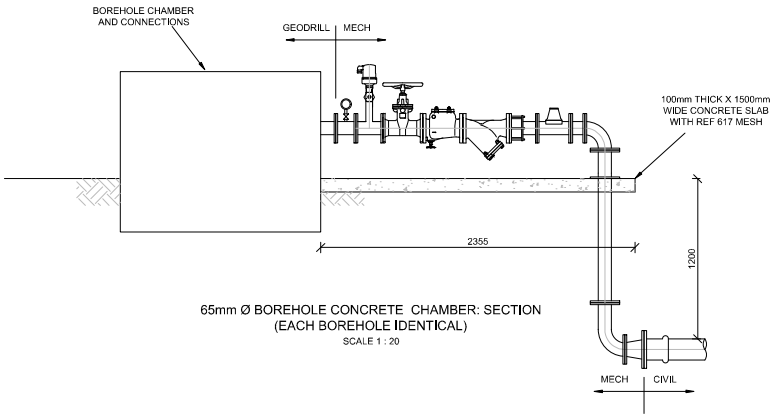
B

Appendix B

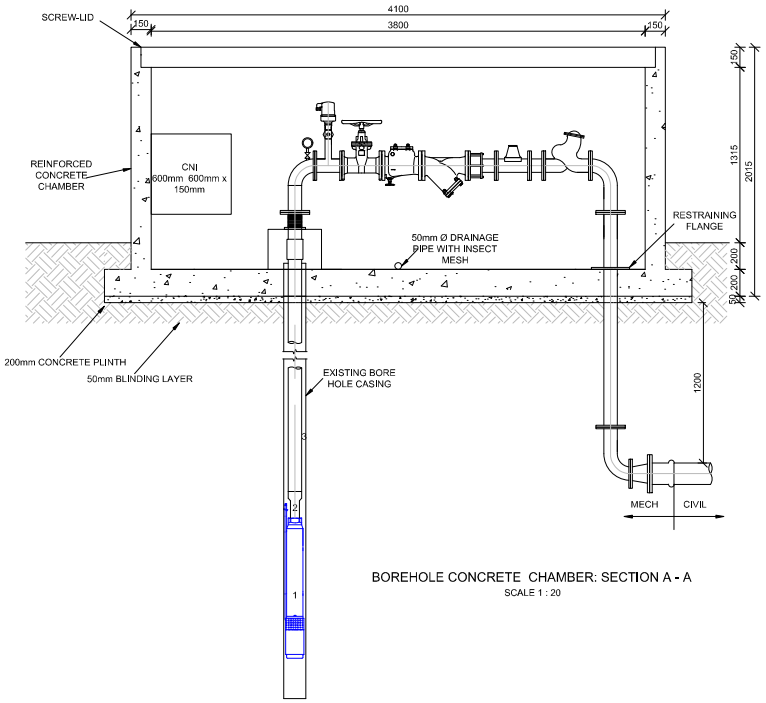
Appendix B – Bulk Water Typical Details



BOREHOLE CONCRETE CHAMBER: PLAN (LID REMOVED)
SCALE 1 : 20



65mm Ø BOREHOLE CONCRETE CHAMBER: SECTION (EACH BOREHOLE IDENTICAL)
SCALE 1 : 20



BOREHOLE CONCRETE CHAMBER: SECTION A - A
SCALE 1 : 20

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A	16-05-2025	JN	FOR INFORMATION	JN	DC

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WSP Group Africa (Pty) Ltd
The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: BULK WATER TYPICAL DETAILS SHEET 3

SCALE:	CHECKED:	APPROVED:
AS SHOWN	JN	DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/19
PROJECT No: 43103108	DRAWING No: 43103108-VAO-WSP-SW-ZZ-DR-WA-TD0003	REV: A

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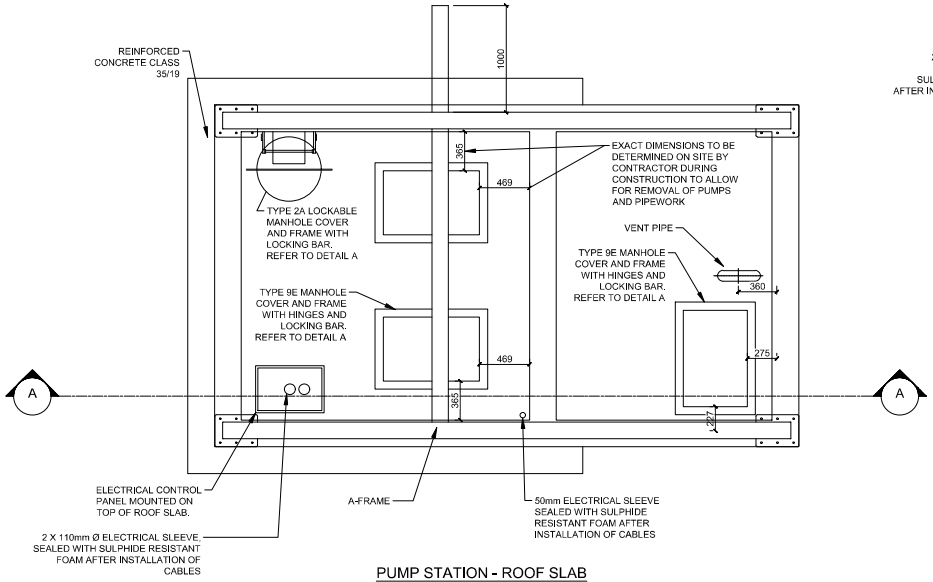
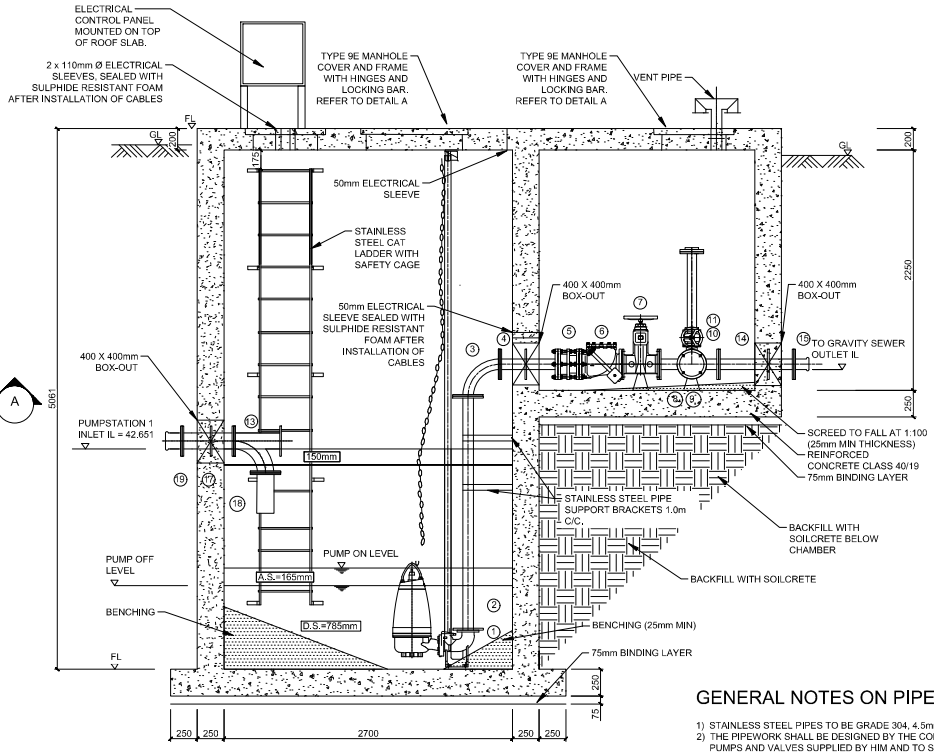
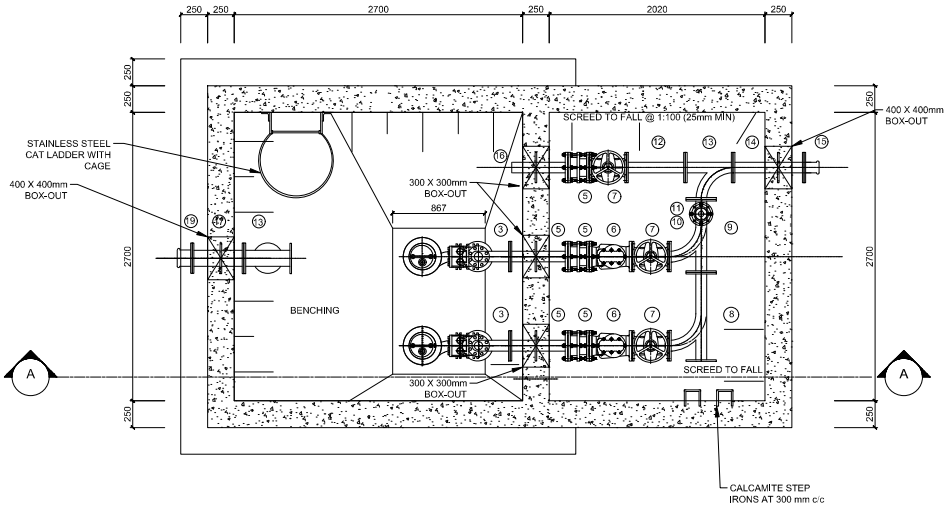


PUMP STATION - ROOF SLAB
SCALE 1:25



PUMP STATION - SECTION A - A
SCALE 1:25



PUMP STATION - PLAN (ROOF SLAB REMOVED)
SCALE 1:25

PIPE SCHEDULES (PUMP STATION)

ITEM	DESCRIPTION	NO
1	100mm Ø X 90° SS PROPRIETRY DUCK FOOT BENDS.	2
2	100mm Ø X 2188mm SS LONG PIPE, FLANGED BOTH ENDS. (SPECIAL DETAIL ITEM 2)	2
3	100mm Ø X 90° SS LONG RADIUS BEND, FLANGED BOTH ENDS.	2
4	100mm Ø X 550mm SS LONG PUDDLE PIPE, FLANGED BOTH ENDS. (SPECIAL DETAIL ITEM 4)	2
5	100mm Ø SS DISMANTLING JOINT (KLAMFLEX OR APPROVED EQUIVALENT)	3
6	100mmØ SANS 1551-1 NON-RETURN VALVES, FLANGED BOTH ENDS.	2
7	100mmØ SANS 664 RESILIENT SEAL ISOLATING VALVES, FLANGED BOTH ENDS.	3
8	100mm Ø X 100mm Ø SS SWEEP TEE, FLANGED BOTH ENDS. (SPECIAL DETAIL ITEM 8)	1
9	100mm Ø X 100mm Ø SS SWEEP TEE WITH 50mmØ STUB, FLANGED BOTH ENDS. (SPECIAL DETAIL ITEM 9)	1
10	50mm Ø SANS 664 RESILIENT SEAL VALVE, FLANGED BOTH ENDS	1
11	50mm Ø VENT-O-MAT, MODEL 050 RGX 1011/1021 (OR SIMILAR APPROVED EQUIVALENT) CLASS 10 AIRVALVE.	1
12	100mm Ø X 549mm SS LONG PIPE, FLANGED BOTH ENDS. (SPECIAL DETAIL ITEM 12)	1
13	150mmØ X 150mm Ø SS SWEEP TEE, FLANGED BOTH ENDS. (SPECIAL DETAIL ITEM 13)	2
14	150mm Ø X 616mm SS LONG PUDDLE PIPE, FLANGED BOTH ENDS. (SPECIAL DETAIL ITEM 14)	1
15	100mm Ø DI FLANGED ADAPTER TO SUIT 110mm HDPE PIPE.	1
16	100mm Ø X 562mm SS LONG PUDDLE PIPE, FLANGED ONE END. (SPECIAL DETAIL ITEM 16)	1
17	150mm Ø X 483mm SS LONG PUDDLE PIPE, FLANGED ONE END. (SPECIAL DETAIL ITEM 17)	1
18	150mm Ø X 316mm SS LONG PIPE, FLANGED ONE END. (SPECIAL DETAIL ITEM 18)	1
19	150mm Ø DI FLANGED ADAPTER TO SUIT 160mm HDPE PIPE.	1

NOTE: SIZES AND DIMENSIONS ARE BASED ON CONCEPTUALISED SCENARIOS AND SHOULD NOT BE CONSIDERED A REPRESENTATION OF ADVANCED DESIGNS. FINAL DESIGNS ARE SUBJECT TO PRELIMINARY AND DETAIL DESIGN ASSESSMENTS

GENERAL NOTES ON PIPEWORK:

1) STAINLESS STEEL PIPES TO BE GRADE 304, 4.5mm MIN WALL THICKNESS.
2) THE PIPEWORK SHALL BE DESIGNED BY THE CONTRACTOR TO SUIT THE CHARACTERISTICS OF THE PUMPS AND VALVES SUPPLIED BY HIM AND TO SUIT THE ACTUAL DIMENSIONS OF THE STRUCTURES AS CONSTRUCTED. THE DESIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE ORDERING OF PIPEWORK.
4) VALVES SHALL BE PROTECTED AGAINST CORROSION WITH WATER RESISTANT FUSION BONDED EPOXY IN ACCORDANCE WITH SANS 1217 TO A DRY FILM THICKNESS OF 300 MICRON.
5) ALL FLANGES TO BE IN ACCORDANCE WITH SANS 1123. PRESSURE TO BE CONFIRMED
6) SUITABLE ISOLATION SHALL BE PROVIDED BETWEEN FLANGES, WASHERS AND BOLTS TO PREVENT GALVANIC CORROSION BETWEEN DISSIMILAR METALS (EG BETWEEN STAINLESS STEEL AND MILD STEEL/ DUCTILE IRON). PAYMENT FOR ISOLATION SHALL BE INCLUDED IN THE RATES FOR PIPEWORK.
7) SUPPORTS AND/OR BRACKETS SHALL BE 316L STAINLESS STEEL AND SHALL BE DESIGNED AND CONSTRUCTED BY THE CONTRACTOR.
8) WHERE THE PIPES ARE SUPPORTED BY CONCRETE OR STEEL, THE PIPE SHALL BE SEPARATED FROM THE CONCRETE BY A 3mm THICK NEOPRENE RUBBER STRIP OVER THE WHOLE OF THE CONTACT AREA.
9) DISMANTLING JOINTS SHALL BE PROVIDED TO ALLOW FOR EASY REMOVAL AND/OR ALIGNMENT OF THE PIPEWORK AND SHALL BE RESTRAINED WHERE REQUIRED.

LEGEND:

E.S.: EMERGENCY STORAGE
A.S.: ACTIVE STORAGE
D.S.: DEAD STORAGE
SS: STAINLESS STEEL
DI: DUCTILE IRON

STRUCTURAL NOTES:

1. ALL DIMENSIONS & LEVELS ON THE DRAWINGS ARE SUBJECT TO CONFIRMATION BEFORE CONSTRUCTION COMMENCES AND ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE ENGINEER.
2. ALL EXCAVATIONS AND FOUNDATIONS TO BE CHECKED AND APPROVED BY THE ENGINEER OR HIS DELEGATED SPECIALIST GEOTECHNICAL ENGINEER BEFORE ANY CONCRETE IS CAST.
3. CONCRETE CHARACTERISTICS (@ 28 DAYS)
   - STRUCTURAL 25 MPa/19
   - WATER RETAINING 35 MPa/19
   - BENCHING 20 MPa/19
   - WALL FOOTINGS 15 MPa/19
   - THRUST BLOCKS 15 MPa/19
   - ENCASEMENTS 20 MPa/19
   - SCREEDS 20 MPa/19
   - BLINDING 15 MPa/19
   - NO-FINES 15 MPa/19
4. MINIMUM COVER TO REINFORCEMENT IS 50mm.
5. MINIMUM THICKNESS OF SCREEDS TO BE 25mm.

NOTES ON PUMPS:

1. PUMP TO BE SUITABLE FOR APPLICATION I.E. PUMPING RAW / UNSCREENED WATER AND POTABLE WATER
2. PUMP TO BE ABLE TO HANDLE 80mm SOLIDS
3. PUMP TO BE APPROVED BY ENGINEER PRIOR TO ORDERING
4. PUMP MAKE AND MODEL TO HAVE PROVEN TRACK RECORD IN SOUTHERN AFRICA AND READILY AVAILABLE SPARES

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CLIENT: VAAL AEROZONE
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The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE
TITLE: BULK WATER TYPICAL DETAILS SHEET 4

SCALE:	CHECKED:	APPROVED:
AS SHOWN	JN	DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/19
PROJECT No: 43103108	DRAWING No: 43103108-WAD-WSP-SW-ZZ-DR-WM-TD0004	REV: A

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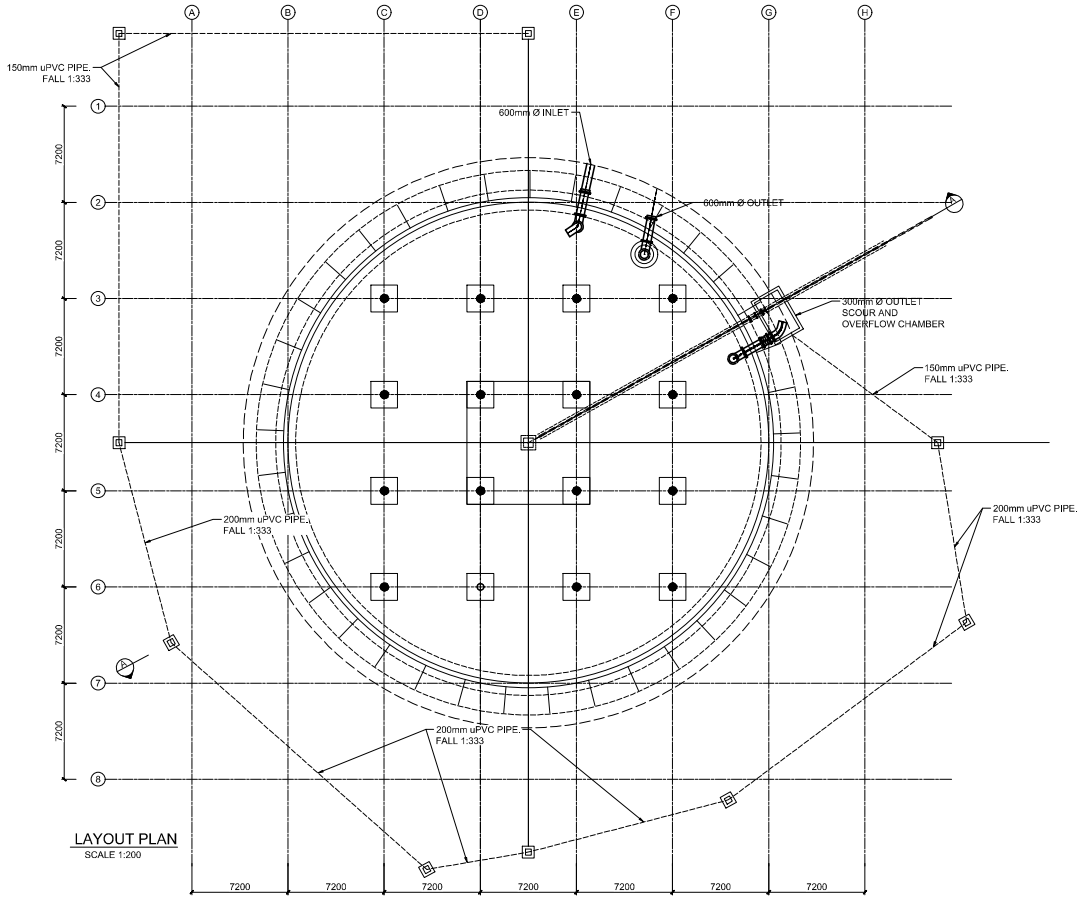

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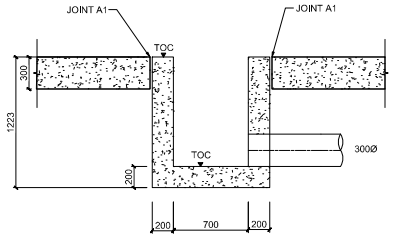

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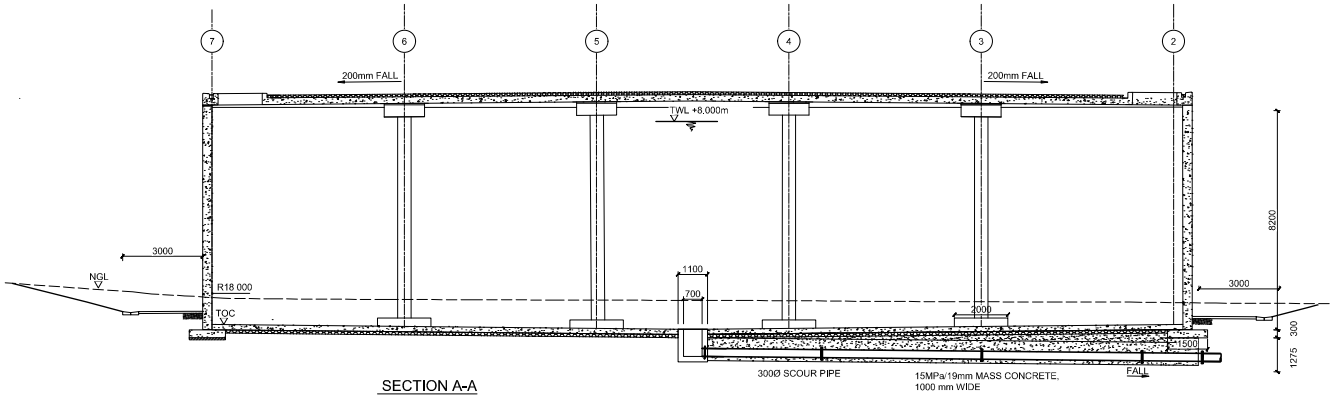

SECTION A-A
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REV	DATE	BY	DESCRIPTION	CHK	APD
A	16-05-2025	JN	FOR INFORMATION	JN	DC

ARCHITECT: -

CLIENT: VAAL AEROZONE

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Transportation and Infrastructure
The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: 8MI RESERVOIR CONCEPT LAYOUT

SCALE:	CHECKED:	APPROVED:
AS SHOWN	JN	DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/16
PROJECT No: 43103108	DRAWING No: 43103108-VAD-WSP-SW-ZZ-DR-4VA-GA0001	REV: A

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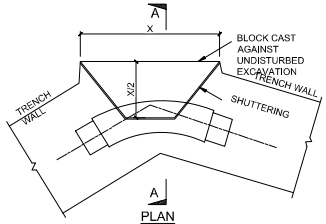
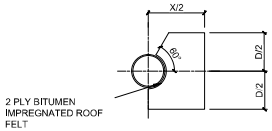
		75ø	100ø	150ø	200ø	250ø	300ø	350ø
11 ¼	D	200	200	300	400	500	600	700
	X	250	300	400	500	650	750	850
	Z			100	125	150	175	200
22 ½	D	200	300	400	600	800	1000	1200
	X	450	500	800	900	1000	1200	1400
	Z	125	150	200	225	250	300	300
45°	D	300	400	600	800	1000	1200	1400
	X	375	500	750	1000	1200	1500	1800
	Z	125	175	275	325	350	375	400
90°	D	300	400	600	800	1000	1200	2400
	X	500	650	1000	1300	1500	1950	2400
	Z	175	250	400	475	500	575	650



PLAN

NOTES:

1. DIMENSIONS TABLED BASED ON AN ALLOWABLE SOIL BEARING CAPACITY OF AT LEAST 50 kPa AND A MAXIMUM WORKING PRESSURE OF 1350 kPa IN THE PIPELINE.
2. DIMENSIONS GIVEN AND THE FORM OF THE BLOCK ARE INTENDED AS A GUIDE ONLY AND SHALL BE FINALISED ON SITE.
3. COUPLINGS AND FLANGES SHALL BE LEFT CLEAR OF CONCRETE.
4. THRUST BLOCKS IN MIX 15 MPa/37,5mm CONCRETE.



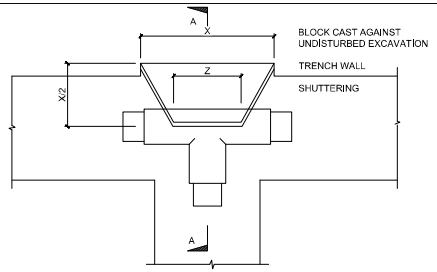
SECTION A-A

THRUST BLOCK FOR PRESSURE PIPELINES AT BENDS

PIPE DIAMETER	X	D	Z
350	2400	1400	650
300	1950	1200	550
250	1500	1000	450
200	1300	800	350
150	1000	600	275
100	650	400	200
75	500	300	150
50	325	200	100

NOTES:

1. DIMENSIONS TABLED BASED ON AN ALLOWABLE SOIL BEARING CAPACITY OF AT LEAST 50 kPa AND A MAXIMUM WORKING PRESSURE OF 1350 kPa IN THE PIPELINE.
2. DIMENSIONS GIVEN AND THE FORM OF THE BLOCK ARE INTENDED AS A GUIDE ONLY AND SHALL BE FINALISED ON SITE.
3. COUPLINGS AND FLANGES SHALL BE LEFT CLEAR OF CONCRETE.
4. THRUST BLOCKS IN MIX 15 MPa/37,5mm CONCRETE.



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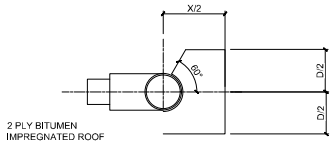
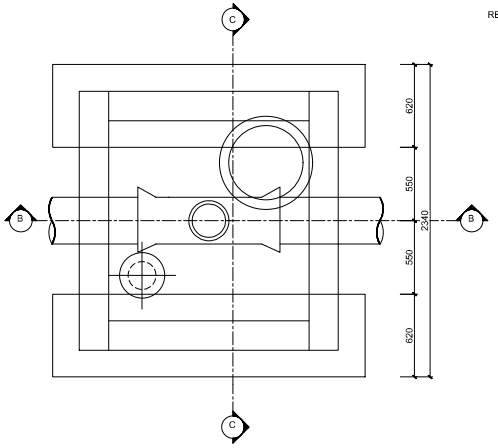
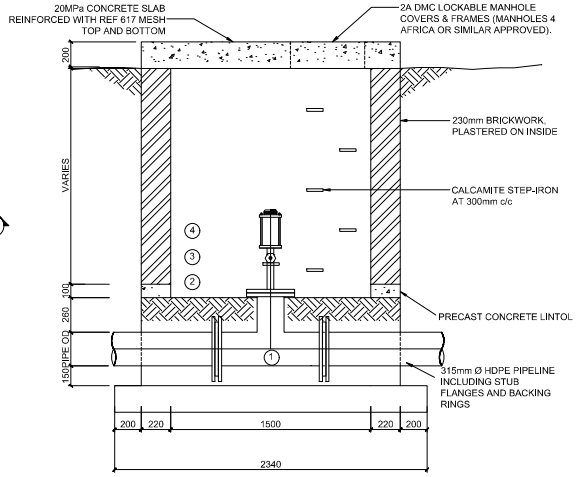


SECTION A-A

THRUST BLOCK FOR PRESSURE PIPELINES AT BENDS



PLAN OF AIR VALVE CHAMBER (ROOF REMOVED)
1:20



SECTION B-B
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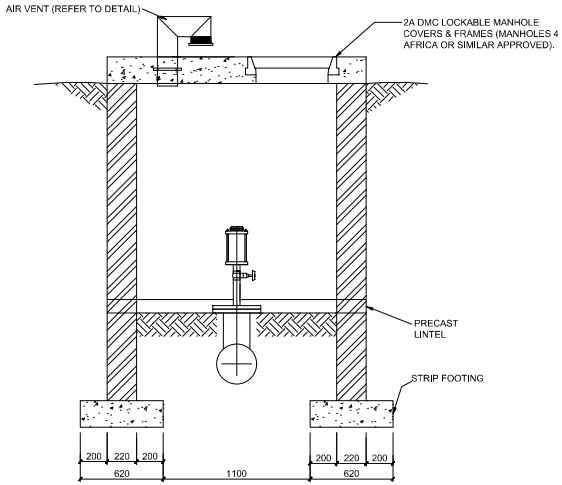

SECTION C-C
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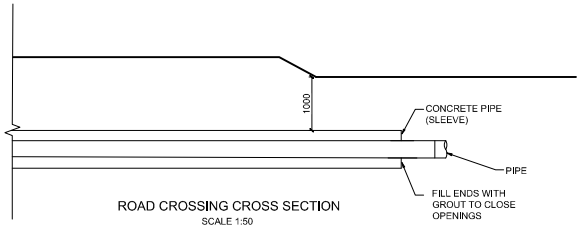
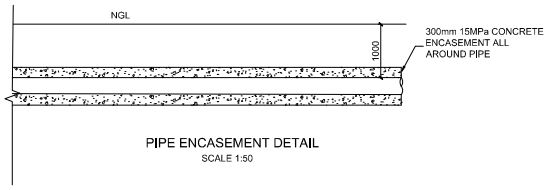


ROAD CROSSING CROSS SECTION
SCALE 1:50



PIPE ENCASEMENT DETAIL
SCALE 1:50

REV	DATE	BY	DESCRIPTION	CHK	APD
A	16-05-2025	JN	FOR INFORMATION	JN	DC

ARCHITECT: -

CLIENT: VAAL AEROZONE

DRAWING STATUS: INFORMATION

A signed version of construction drawings are available in electronic format at the WSP office of origin as well as at the WSP office of issue

WSP Group Africa (Pty) Ltd
The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: BULK WATER TYPICAL DETAILS SHEET 1

SCALE:	CHECKED:	APPROVED:
AS SHOWN	JN	DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/19
PROJECT No: 43103108	DRAWING No: 43103108-WD-WSP-SW-ZZ-DR-WA-TD0001	REV: A

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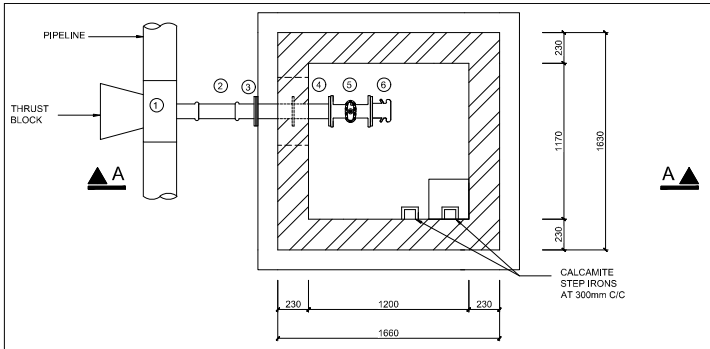
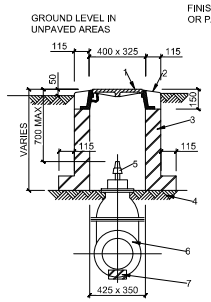
TEMPLATE: LTR50M MAY 2017

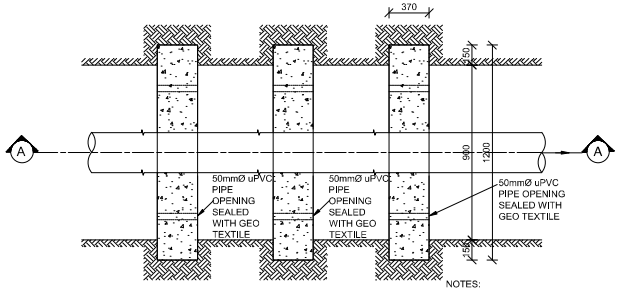


PLAN SCOUR VALVE CHAMBER
1:20



VALVE CHAMBER > 200 NOM. Ø

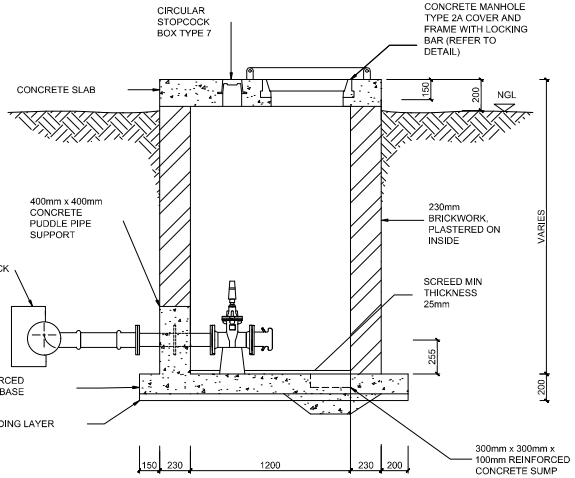
ITEMS
1. - RECTANGULAR POLYMER CONCRETE MANHOLE COVER AND FRAME TO SABS 558 - TYPE 5. (COVER PAINTED BLUE) NOMINAL DAYLIGHT OPENING 375 x 300.
2. - CONCRETE COLLAR IN MIX 20 CONCRETE. TOP SURFACE STEEL TROWEL FINISH AND EDGE 100mm R ROUNDED.
3. - 115mm BRICKWORK (UNPLASTERED) IN ENGINEERING BRICKS TO SABS 227, LAID IN 1:3 CEMENT/SAND MORTAR.
4. - SELECTED BACK FILL, COMPACTED TO MIN. 93% MOD. AASHTO (100% FOR SAND) DENSITY.
5. - VALVE SPINDLE CAP.
6. - GATE VALVE.
7. - TWO BRICKS UNDER VALVE.



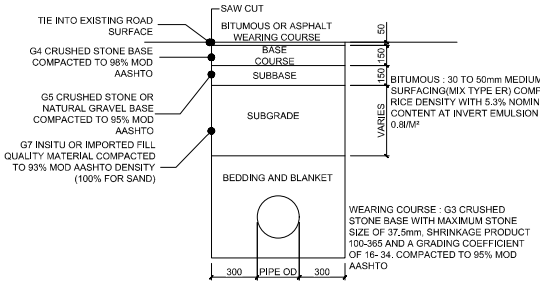
ANCHOR BLOCKS : PLAN
SCALE 1:20

PRECAST OPTIONS CAN BE CONSIDERED

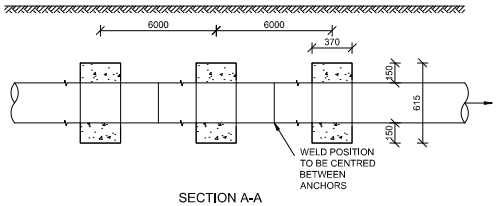
NOTES:
1. SHOULD FLOOD OCCUR, HIGH VELOCITIES WILL RESULT IN EROSION/ SCOURING AND DAMAGE TO THE PIPELINE.
2. FARMERS ARE ABLE TO DAMAGE PIPELINE



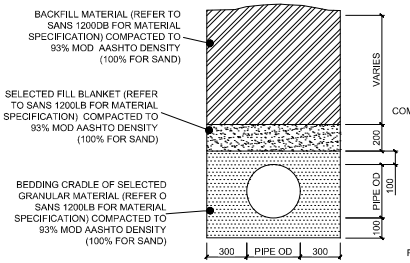
SCOUR VALVE CHAMBER SECTION A-A
1:20



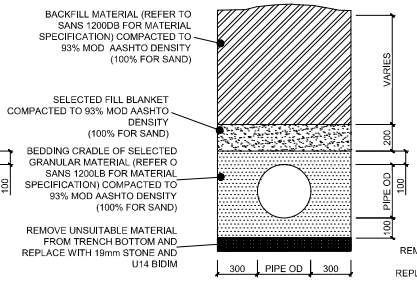
REINSTATEMENT OF ROAD SURFACE
SCALE 1:20



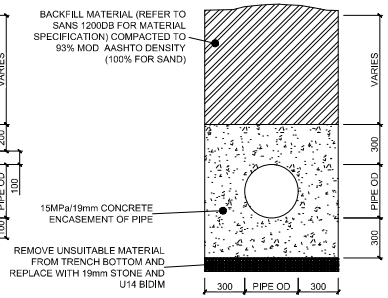
SECTION A-A
SCALE 1:20



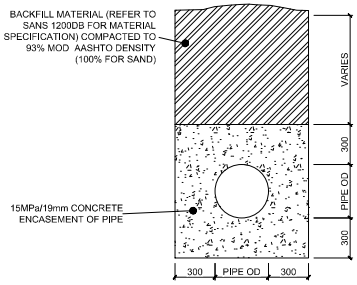
TYPICAL PIPE TRENCH DETAIL FOR RISING MAINS
SCALE 1:20



TYPICAL PIPE TRENCH DETAIL FOR RISING MAINS (UNSUITABLE MATERIAL)
SCALE 1:20



TYPICAL RIVER TRENCH DETAIL FOR RISING MAINS (UNSUITABLE MATERIAL)
SCALE 1:20



TYPICAL RIVER TRENCH DETAIL FOR RISING MAINS
SCALE 1:20

REV	DATE	BY	DESCRIPTION	CHK	APD
A	16-05-2025	JN	FOR INFORMATION	JN	DC

ARCHITECT: -

CLIENT: VAAL AEROZONE

DRAWING STATUS: INFORMATION

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Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: BULK WATER TYPICAL DETAILS SHEET 2

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TEMPLATE : LTR50M MAY 2017

C

Appendix C

Appendix C – Hydrogeology Study

PRISM Environmental Management Services

Vaal Aerotropolis – Basic Hydrogeology Study

Project Number: Delh.2024.035-16

WATER SYSTEMS MODELLING

Contact: +2782 497 9088
info@delta-h.co.za
www.delta-h.co.za
PO Box 11465
Silver Lakes
0054
Pretoria, South Africa

May 2024

PRISM Environmental Management Services

Vaal Aerotropolis – Basic Hydrogeology Study

Delh.2024.035-16

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Client Contact	De Wet Botha
Date	May 2024

Dr Martin Holland (Pr.Sci.Nat)
PRINCIPAL HYDROGEOLOGIST

Mr Theo Rossouw (Pr.Sci.Nat)
HYDROGEOLOGIST

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1. INTRODUCTION

1.1. BACKGROUND

Delta-H (Delta-H Water System Modelling PTY Ltd) was appointed by PRISM Environmental Management Services to prepare the groundwater specialist input for a Water Use Licence Application and Environmental Authorisation application for the planned Vaal Aerotropolis development.

The groundwater report will be documented in a format as requested for Geohydrology Reports according to the Government Notice R. 267 (Government Gazette No. 40713, 27/03/2017) pertaining to the National Water Act, 1998 (Act No. 36 of 1998).

1.2. SCOPE OF WORK

Data Collection and Review.

All available national/regional scale as well as local geological and hydrogeological information were collated and assessed. Furthermore, the national aquifer vulnerability (DRASTIC) and aquifer classification was assessed for the site as well. Groundwater vulnerability gives an indication of how susceptible an aquifer is to contamination. Aquifer vulnerability is used to represent the intrinsic characteristics that determine the sensitivity of various parts of an aquifer to being adversely affected by a contaminant load imposed from surface.

Hydrocensus

The dataset will be augmented with a hydrocensus to establish the quality and quantity of the groundwater resource (including the measurement of groundwater levels) as well as actual utilisation thereof.

Reporting

The final groundwater specialist report compiled will document all methodologies, findings, quantitative analysis, recommendations (proposed monitoring programme and recommended mitigation measures) and conclusions. The Impact assessment will be based on the Regulation 3 h(vi) of Appendix 2 of R.983 (2014), under the NEMA (1998), which requires an assessment of the nature (status), consequences (magnitude), extent, duration, probability and significance of the identified potential environmental impacts of the proposed mining operation.

2. GENERAL SETTING

2.1. LOCALITY

The Vaal Aerotropolis development is located approximately 10 km northwest from Vanderbijlpark, in the Gauteng Province (Figure 2-1). The planned Vaal Aerotropolis development falls within the reaches of the Upper Vaal Water Management Area and falls within quaternary catchment C22J. A summary of readily available hydrological information for the catchments is provided in Table 2-1.

Table 2-1: Summary of information for the quaternary catchment C22F (GRAII; WR2005).

Quaternary catchment	Area (km²)	Mean Annual Precipitation (mm/a)	Mean Annual Runoff (mm/a)	Mean Annual Baseflow (mm/a)	Mean Annual Recharge	
					mm/a	% of MAP
C22J	668.7	633	21	6	41.79	6.6

2.2. RAINFALL

The study area falls within the summer rainfall region, with a Highveld climate of warm to hot summers and cold, dry winters. The Mean Annual Precipitation (MAP) is according to the GRA II by the Department of Water and Sanitation ranges from 633mm/a.

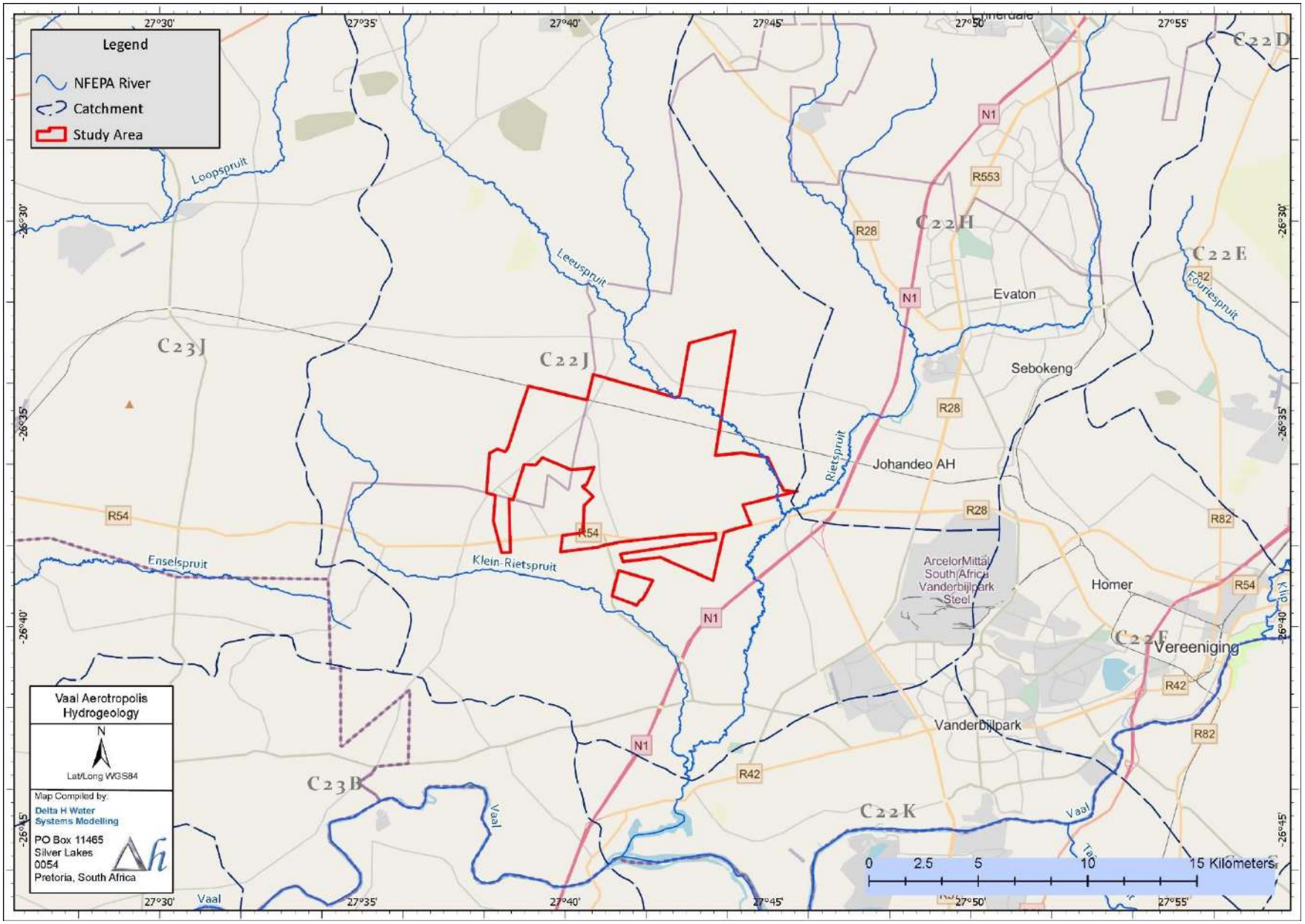

Figure 2-1: Locality map of the Vaal Aerotropolis study area.

3. PREVAILING GROUNDWATER CONDITIONS

3.1. GEOLOGY

The study area is underlain by sedimentary deposits overlaying the older Transvaal Supergroup.

3.1.1. Sedimentary deposits (quaternary)

The study area is underlain by sedimentary deposits from the quaternary era. These sedimentary deposits are characterised by a thick soil cover overlaying the Transvaal Supergroup. The quaternary sedimentary deposits consist mostly of alluvial and colluvial desists.

3.1.2. Transvaal Supergroup

The Transvaal Supergroup rocks were intruded by the Bushveld Igneous Complex with the Magaliesberg formation from the Pretoria Group forming the floor. The regional area is characterised by the Magaliesberg formation. The Magaliesberg formation formed from shallow marine and sandy coastline regressive system and formed sandstone. The post-Magaliesberg formation consist of quarzitic sandstone and shale. The Transvaal Supergroup overlies the older Witwatersrand and Ventersdorp Supergoups. Various geological formations and groups make up the Transvaal Supergroup. These formations and groups include the Blackreef, Chunniespoort and Pretoria groups. Associated with these groups are the Silverton, Magaliesberg and Daspoort formations. The Magaliesberg formation consists of sandstone with mudrock lenses, the Silverton formation consisting of carbonate rocks and shales, and the Daspoort consists of sandstone and mudrocks. These formations characterise the study area (Figure 3-1).

3.2. AQUIFERS

Based on the conceptual hydrogeological understanding of the site, the following hydro-stratigraphic zones are differentiated within the model area:

- Intergranular aquifer system (sedimentary deposits and weathered aquifer)
- Fractured hard rock aquifer.

<u>Intergranular aquifer system</u>

The intergranular and weathered zone consists of the unconfined or semi-confined shallow weathered aquifer. Due to direct rainfall recharge and dynamic groundwater flow through the unconfined aquifer in weathered rock, the water quality is generally good, but in the absence of an overlying confining layer also vulnerable to pollution. Localised perched aquifers, formed from secondary mineralised clay layers and ferricrete layers, may occur. Water intersections in the intergranular and weathered aquifer are mostly above or at the interface to fresh bedrock, where less permeable layers of weathering products and capillary forces limit the vertical percolation of water and promote lateral water movement.

The shallow unconfined, phreatic (or water table) aquifer comprises saprolite (that formed as a result of intensive and in-situ weathering processes) and saprock (differentially weathered and fractured upper bedrock underlying the saprolite) zones. The soil and saprolite are collectively termed the regolith. The saprolite and saprock (classified as part of the bedrock) are generally treated as a single weathered aquifer unit, referred to as the weathered overburden, which varies in thickness and is derived from the in-situ decomposition of the underlying noritic rocks.

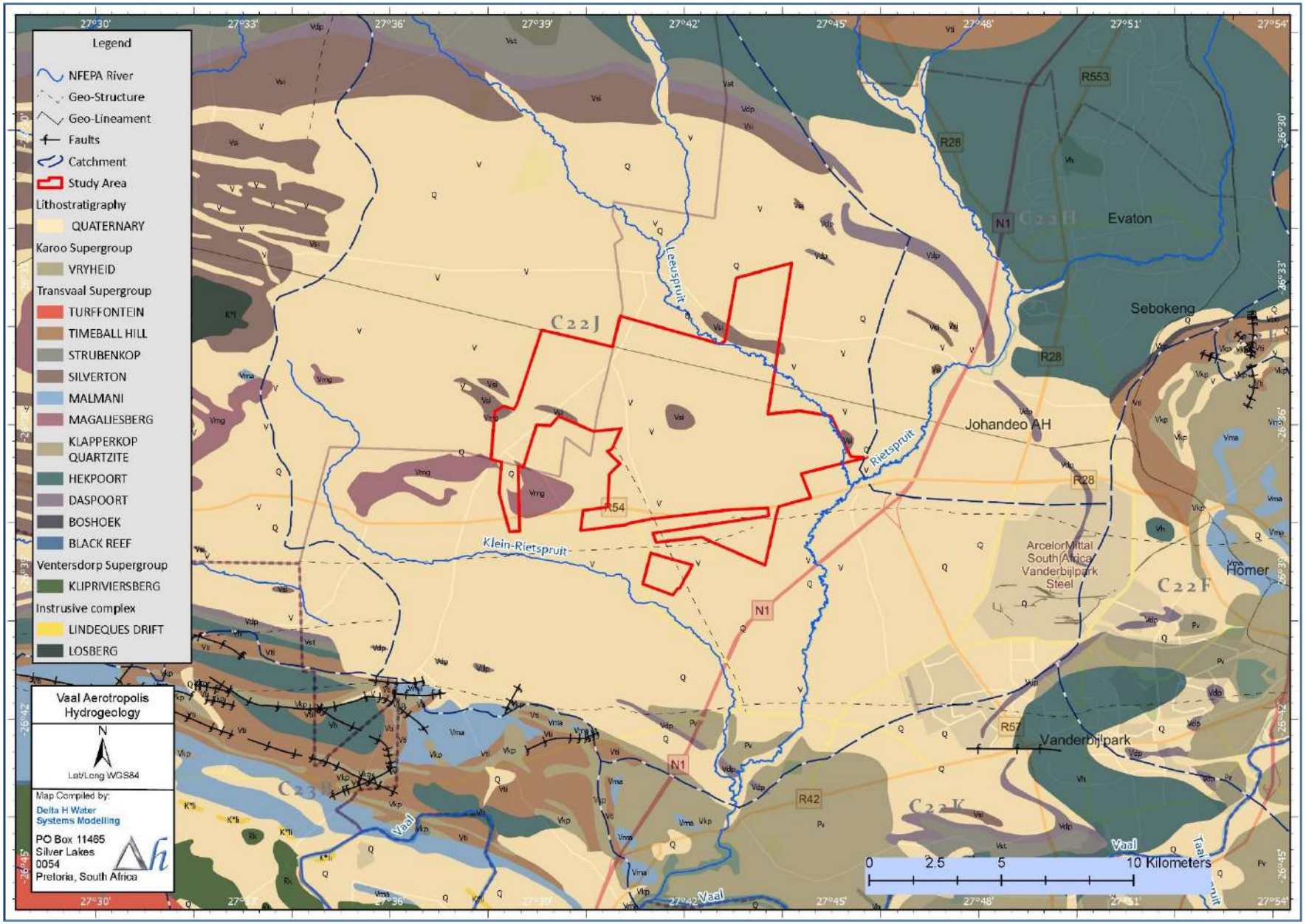

Figure 3-1: Geology of the Vaal Aerotropolis study area.

Fractured hard rock aquifer.

The fractured hard rock aquifer consists of mostly sandstone, shale and mudstones. Groundwater flow is governed by secondary porosities like faults, fractures, joints, bedding planes or other geological contacts, while the rock matrix itself is considered less permeable. Geological structures are generally better developed in competent rocks like sandstone. Not all secondary structures are water bearing due to e.g. compressional forces by the neo-tectonic stress field overburden closing the apertures. The fractured aquifer is considered a confined aquifer. Fractured aquifers have typically a low hydraulic conductivity but are known to be highly heterogeneous with yields ranging from 0.5L/s to 2L/s. Higher yields are typically associated with higher hydraulic conductivities along fracture zones associated with faults and shear zones and at contact zones with intrusive rocks. Depending on the residence time of the water in the aquifer, groundwater quality can be poor. The groundwater yield potential is classified as poor since most boreholes produce less than 2 litres per second (l/s).

The aquifer system underlying the project area is described as an intergranular and fractured aquifer with borehole yields varying between 0.5 to 2 l/s.

3.1. HYDROCENSUS

3.1.1. Geo-sites and observations

The hydrocensus was conducted in the Vaal Aerotropolis development area during February 2024. A total of 43 geo-sites (Table 3-1) were verified, comprising mostly of private boreholes. Majority of the boreholes are in use, typically for domestic purposes and agricultural use. No municipal service lines (water supply) are available in the area. As a result, groundwater is considered as the only resource for water supply to the area.

A total of 17 groundwater levels could be measured from the boreholes during the field verification. Majority of boreholes are equipped and in use. Groundwater levels ranged from 0.64 mbgl to 6.8 mbgl, with an average of 2.9 mbgl. Discussions with the landowners mentioned most boreholes were drilled quite shallow, some as shallows as 12 m.

Table 3-1: Summary of the geo-sites (boreholes) obtained during the hydrocensus data.

Name	Latitude	Longitude	Elevation	Owner	Status	Equipment	Use	Water Level [m]	Casing Height [m]	Casing ID [mm]
Aartsvlei-1	-26.56835	27.65816	1518	SenWes Agriculture	In Use	Equipped, submersible pump	Domestic	3.96	0.25	165
Aartvlei-2	-26.56753	27.65706	1519	SenWes Agriculture	In Use	Equipped, submersible pump	Domestic	5.23	0.25	165
Blesbok-1	-26.64800	27.69336	1523	Walker, E	Unused	Unequipped		3.73	0.1	165
Blesbok-2	-26.65128	27.69343	1524	Walker, E	Unused	Unequipped		2.28		
Klipfontein-1	-26.61788	27.64344	1536	Walker, C	In Use	Equipped, windmill	Cattle			
Klipkop-2	-26.57209	27.71764	1487	State-owned	In Use	Equipped, submersible pump	Domestic & agriculture			
Klipkop-3	-26.57095	27.71880	1492	State-owned	In Use	Equipped, submersible pump	Domestic & agriculture		-0.3	165
Klipkop-4	-26.56741	27.73557	1503	Private	In Use	Equipped, submersible pump	Domestic			
Klipkop-1	-26.57046	27.71485	1489	State-owned	Unused	Unequipped			0.35	144
Rietuil-1	-26.60587	27.74779	1516	Walker, E	Unused	Unequipped		2.72	0.1	165

Name	Latitude	Longitude	Elevation	Owner	Status	Equipment	Use	Water Level [m]	Casing Height [m]	Casing ID [mm]
Tweefontein-1	-26.58776	27.66071	1520	Walker, C	In Use	Equipped, submersible pump	Domestic	2.55	0.1	165
Tweefontein-3	-26.57873	27.65748	1526	Walker, C	In Use	Equipped, windmill	Cattle			
Tweefontein-4	-26.59797	27.64100	1519	Walker, C	In Use	Equipped, submersible pump	Domestic	6.8	0.35	165
Tweefontein-2	-26.58709	27.66107	1520	Walker, C	In Use	Equipped, submersible pump	Domestic			
Vlakplaas-1	-26.63701	27.69578	1509	Walker, E	In Use	Equipped, submersible pump	Domestic		0.2	165
Vlakplaas-10	-26.61680	27.72436	1525	Walker, E	Unused	Equipped, old-pump				
Vlakplaas-11	-26.62104	27.72278	1523	Walker, E	Unused	Equipped, old-pump		0.65	0.25	165
Vlakplaas-12	-26.62104	27.72280	1522	Walker, E	Unused	Unequipped		0.64	0.25	144
Vlakplaas-13	-26.62250	27.71829	1525	Walker, E	Unused	Equipped, windmill			0.35	
Vlakplaas-14	-26.62053	27.71848	1525	Walker, E	Unused	Equipped, old-pump			0.35	
Vlakplaas-16	-26.61898	27.71509	1526	Walker, E	Unused	Unequipped		1.54	0.4	144
Vlakplaas-15	-26.62026	27.71995	1523	Walker, E	Unused	Equipped, old-pump				
Vlakplaas-17	-26.59824	27.72193	1525	Walker, E	Unused	Unequipped		1.5	0.2	144
Vlakplaas-18	-26.60458	27.73600	1523	Walker, E	In Use	Equipped, windmill	Cattle		0.2	
Vlakplaas-19	-26.61480	27.73450	1524	Walker, E	Unused	Unequipped		blocked 2m	0	165
Vlakplaas-2	-26.62415	27.68834	1517	Walker, E	In Use	Equipped, submersible pump	Domestic			
Vlakplaas-20	-26.61533	27.73240	1525	Walker, E	Unused	Equipped, windmill			0	
Vlakplaas-21	-26.61954	27.72950	1523	Walker, E	Unused	Equipped, old-pump			0	
Vlakplaas-22	-26.62832	27.69917	1535	Walker, E	In Use	Equipped, submersible pump		2.25	0.25	
Vlakplaas-23	-26.62449	27.70491	1537	Walker, E	In Use	Equipped, windmill	Cattle		0.25	0.1
Vlakplaas-24	-26.62504	27.68803	1530	Walker, E	Unused	Equipped, old-pump				
Vlakplaas-25	-26.62423	27.68623	1528	Walker, E	In Use	Equipped, submersible pump		4.9	0.2	165
Vlakplaas-26	-26.61616	27.68730	1536	Walker, E	In Use	Equipped, windmill	Cattle		0.1	
Vlakplaas-27	-26.62801	27.68243	1531	Walker, E	In Use	Equipped, windmill & submersible	Domestic & cattle		0.2	
Vlakplaas-28	-26.63135	27.68010	1535	Walker, E	Unused	Unequipped		3.07	0.1	144
Vlakplaas-29	-26.63346	27.67989	1539	Walker, E	Unused	Unequipped		2.28	0.2	144
Vlakplaas-3	-26.62285	27.69028	1520	Walker, E	In Use	Equipped, submersible pump	Domestic			
Vlakplaas-4	-26.61626	27.70493	1527	Walker, E	In Use	Equipped, windmill	Cattle		0.35	165

Name	Latitude	Longitude	Elevation	Owner	Status	Equipment	Use	Water Level [m]	Casing Height [m]	Casing ID [mm]
Vlakplaas-5	-26.61564	27.70314	1535	Walker, E	In Use	Equipped, windmill & submersible	Domestic & cattle			
Vlakplaas-6	-26.61648	27.70407	1535	Walker, E	In Use	Equipped, windmill	Cattle		0.25	144
Vlakplaas-7	-26.61362	27.72053	1528	Walker, E	In Use	Equipped, windmill	Cattle			
Vlakplaas-8	-26.61535	27.72014	1526	Walker, E	In Use	Equipped, submersible pump	Domestic	1.52	0.35	165
Vlakplaas-9	-26.61611	27.71991	1524	Walker, E	In Use	Equipped, submersible pump	Domestic	5.07	0.3	165

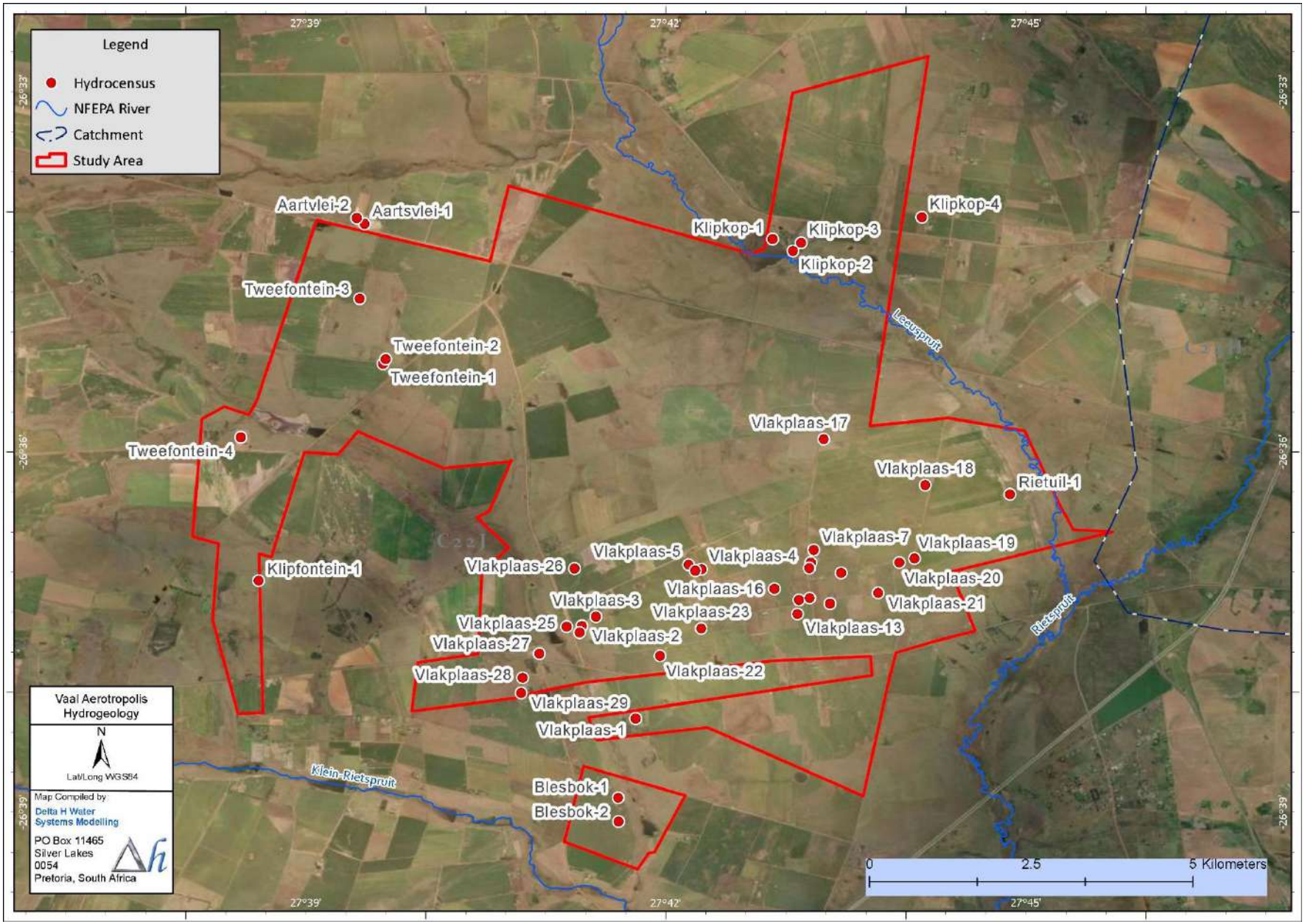

Figure 3-2: Spatial distribution of the hydrocensus sites.

3.1.1. Groundwater quality (baseline)

A total of five (5) boreholes were samples and submitted to an accredited laboratory, Waterlab (Pty) Ltd. Photos of geo-sites visited is shown in Appendix A, while the spatial distribution of the sites is shown in Figure 3-2. Laboratory certificates are provided in Appendix B.

A summary of the groundwater quality results obtained from the borehole samples, are shown in Table 3-2. The concentrations of selected constituents of groundwater samples were compared against the following standards / target values:

- SANS (241-1 2015) South African National Standards for Drinking Water.
- South African Water Quality Guidelines (SAWQG) for Drinking Water (DWAF 1996).

The following observations were made based on exceedances for the target values (target value exceedances refer to either SANS or SAWQG or both):

- The pH levels are circum-neutral.
- The salts loads, including electrical conductivity and total dissolved solids are slightly elevated for samples Rietkuil-1, Klipkop-2 and Tweefontein-1.
- Cation concentrations, calcium and magnesium exceed the drinking water standards.
- Anion concentrations are mostly low, with sulphate exceeded in Reitkuil-1 and chloride Klipkop-2 and Tweefontein-1.
- Nitrate as N concentrations are elevated for most boreholes, apart from Rietkuil-1. The nitrogen ion source could be from agricultural practices.
- Metalloids are mostly below limit of detection, apart from manganese at borehole Rietkuil-1.

Table 3-2: Water quality (in mg/l) for the samples collected during the hydrocensus.

Parameter (mg/l)	DWA SAWQTV Drinking Water	SANS 241-1: 2015	Rietkuil-1	Klipkop-2	Tweefontein-1	Aartsvlei-1	Vlakplaas-1
pH	6-9	5-9.7	7.3	7.5	7.4	7.4	7.4
Conductivity mS/m	<70	<170	99.1	118	77.4	36.5	62
Total Dissolved Solids	<450	<1200	674	782	496	254	438
Total Alkalinity as $CaCO_3$	NS	NS	180	212	104	96	220
Chloride, Cl	<100	<300	85	116	111	10	25
Sulphate, SO_4	<200	<500	200	145.0	<2	9	13
Free & Saline Ammonia as N	NS	NS	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate as N	<6	<11	2.4	26	21	15	17
Fluoride, F	<1	<1.5	0.3	<0.2	<0.2	0.2	<0.2
Calcium, Ca	<32	NS	66	110	55	17	53
Magnesium, Mg	<30	NS	59	57	37	17	32
Sodium, Na	<100	<200	34	36	27	25	23
Potassium, K	<50	NS	23	4.2	6.6	4.6	4.4
Manganese, Mn	<0.05	0.4	0.558	<0.025	<0.025	<0.025	<0.025
Silicon, Si	NS	NS	6.7	14.8	16.1	16.2	22
Boron, B	NS	2.4	0.032	<0.025	<0.025	<0.025	<0.025
Barium, Ba	NS	0.7	0.043	0.059	0.013	0.017	0.021
Turbidity (NTU)		<1	79	0.6	0.4	0.6	0.1
Titanium, Ti		<1	0.027	0.042	0.023	<0.010	0.019

Red indicates an exceedance of both the SANS 241 (2015) limit and SAWQG Target Value

Green indicates an exceedance of the DWA SAWQG target value

3.1.2. Hydrochemical facies

A visualisation of the relative mineral composition of the samples in the Piper diagram (Figure 3-3) shows the comparison of the water chemical signatures for the (sampled) groundwater qualities. Three distinct signatures are seen, boreholes Vlakplaas-1 and Aartsvlei-1 are characterised by a Mg/Ca-HCO_3 indicating freshly recharged groundwater with limited time mineralisation (i.e., water/rock interaction), borehole Tweefontein-1 is characterised by a Mg/Ca-Cl, indicating a more mineralised groundwater signature and boreholes Rietkuil-1 and Klipkop-2 are characterised by a Mg/Ca- HCO_3/Cl indicating mixed groundwater or groundwater undergoing mineralisation.

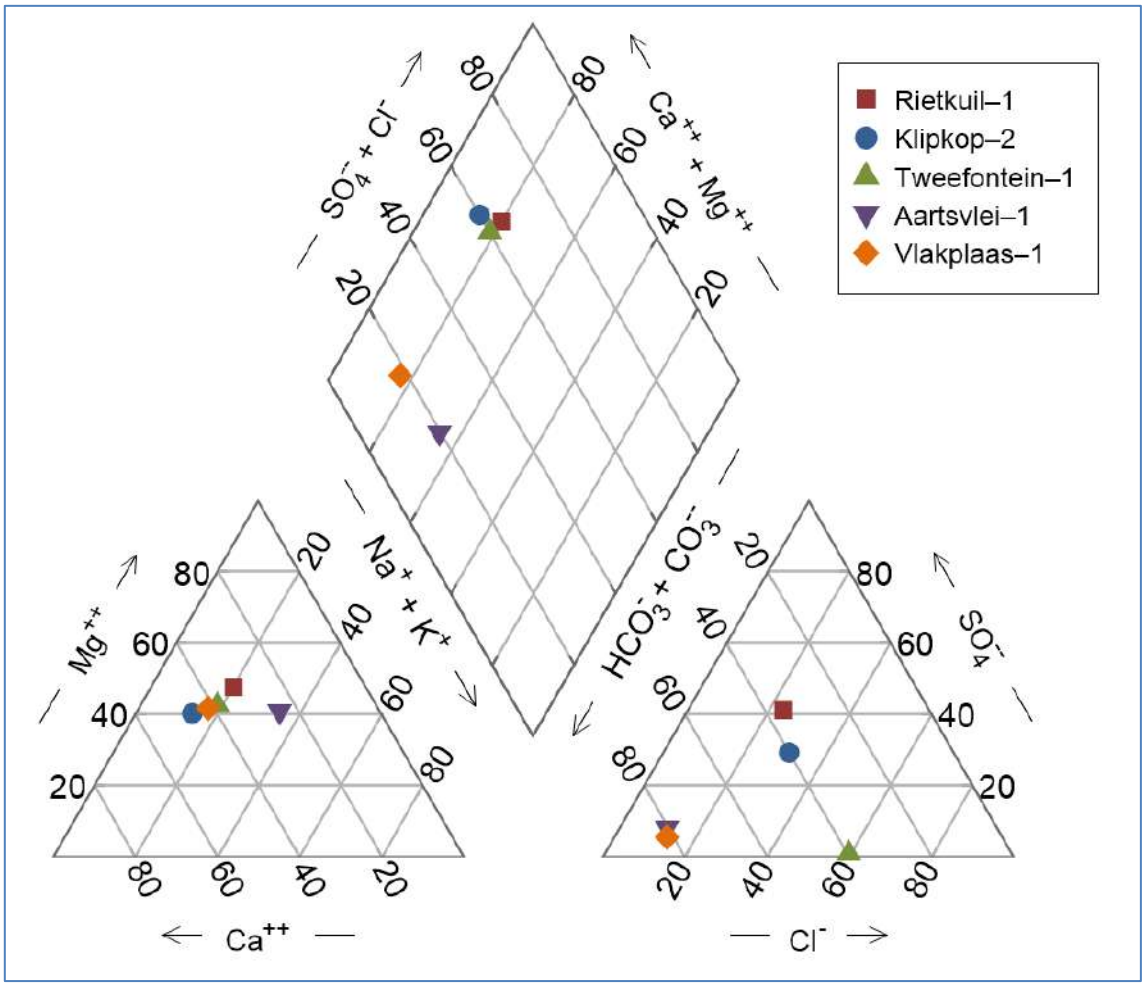

Figure 3-3: Piper diagram based on the median groundwater results.

4. AQUIFER CHARACTERISATION

4.1. GROUNDWATER VULNERABILITY

Groundwater vulnerability gives an indication of how susceptible an aquifer is to contamination. Aquifer vulnerability is used to represent the intrinsic characteristics that determine the sensitivity of various parts of an aquifer to being adversely affected by a contaminant load imposed from surface. Figure 4-1 shows the national groundwater vulnerability ratings underlying the project area, indicating the tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer. The method is based on the DRASTIC method which includes the following parameters: Depth to water table; Recharge (net); Aquifer media; Soil media; Topography; Impact of the vadose (unsaturated) zone; conductivity (hydraulic).

Based on the national results, the aquifer underlying the project area has a medium to high vulnerability rating.

4.2. AQUIFER CLASSIFICATION

According to the Hydrogeological Map (1:500 000) series, the regional hydrogeology is characterized as an 'intergranular and fractured aquifer' with a typical potential yield of 0.5 – 2.0 litres per second. A micro-fractured matrix in the fractured sedimentary rocks provides the storage capacity with some groundwater movements, while secondary features such as fractures / faults and bedding planes enhance the groundwater flow. Based on the aquifer classification map (Parsons and Conrad, 1998), the aquifer system underlying the project area is regarded a "minor aquifer".

A summary of the classification scheme is provided in Table 4-1. In this classification system, it is important to note that the concepts of Minor and Poor Aquifers are relative and that yield is not quantified. Within any specific area, all classes of aquifers should therefore, in theory, be present.

Table 4-1: Aquifer classification scheme after Parsons and Conrad (1998).

Aquifer	Description
Sole source aquifer	An aquifer used to supply 50% or more of urban domestic water for a given area, for which there are no reasonably available alternative sources, should this aquifer be impacted upon or depleted.
Major aquifer region	High-yielding aquifer of acceptable quality water.
Minor aquifer region	Moderately yielding aquifer of acceptable quality or high yielding aquifer of poor-quality water.
Poor aquifer region	Insignificantly yielding aquifer of good quality or moderately yielding aquifer of poor quality, or aquifer that will never be utilised for water supply and that will not contaminate other aquifers.
Special aquifer region	An aquifer designated as such by the Minister of Water

4.1. AQUIFER PROTECTION CLASSIFICATION

As part of the aquifer classification, a Groundwater Quality Management (GQM) Index is used to define the level of groundwater protection required (Parsons 1995). The point scoring system and classification of the site-specific project area are presented in Table 4-2.

Table 4-2: Groundwater Quality Management (GQM) Classification System.

Aquifer System Management Classification		
Class	Points	**Project area**
Sole Source Aquifer System: Major Aquifer System: Minor Aquifer System: Non-Aquifer System: Special Aquifer System:	6 4 2 0 0 – 6	**2**
Aquifer Vulnerability Classification		
Class	Points	**Project area**
High: Medium: Low:	3 2 1	**3**

The recommended level of groundwater protection based on the Groundwater Quality Management Classification is calculated as follows: GQM Index = Aquifer System Management x Aquifer Vulnerability = 2 x 3 = 6

A Groundwater Quality Management Index of 6 was estimated for the project area from the ratings for the Aquifer System Management Classification (Table 4-3). According to this estimate, a medium-level groundwater protection is required for the fractured aquifer. Reasonable groundwater protection measures are recommended to ensure that no cumulative pollution affects the aquifer, even in the long term. DWS's water quality management objectives are to protect human health and the environment. Therefore, the significance of this aquifer classification is that if any potential risk exists, measures must be taken to limit the risk to the environment, which in this case is the protection of the underlying aquifer.

Table 4-3: GQM index for the project area.

Index	**Level of Protection**	**Project area**
<1 1 - 3 3 - 6 6 - 10 >10	Limited Low Level Medium Level High Level Strictly Non-Degradation	**6**

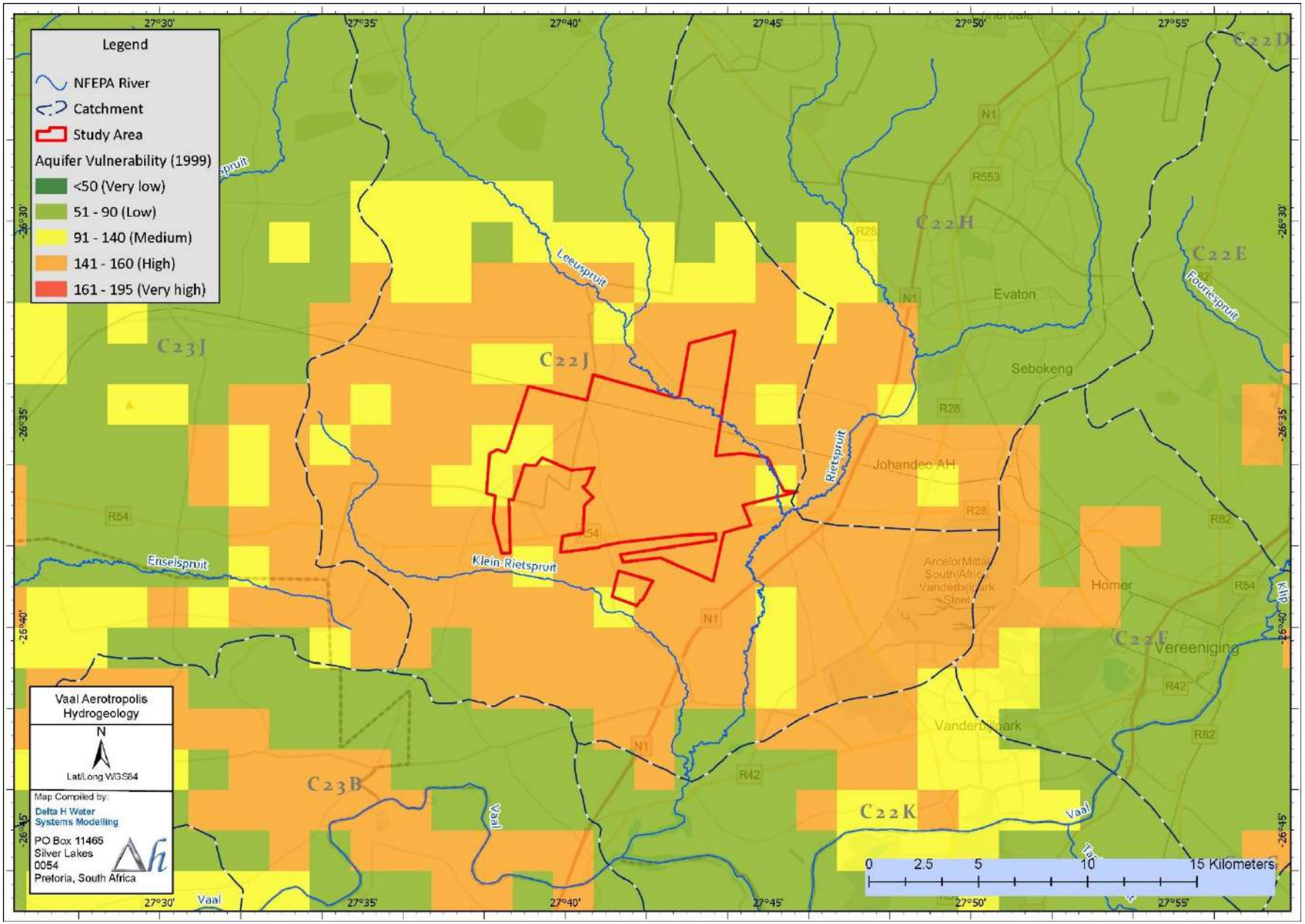

Figure 4-1: Groundwater vulnerability map.

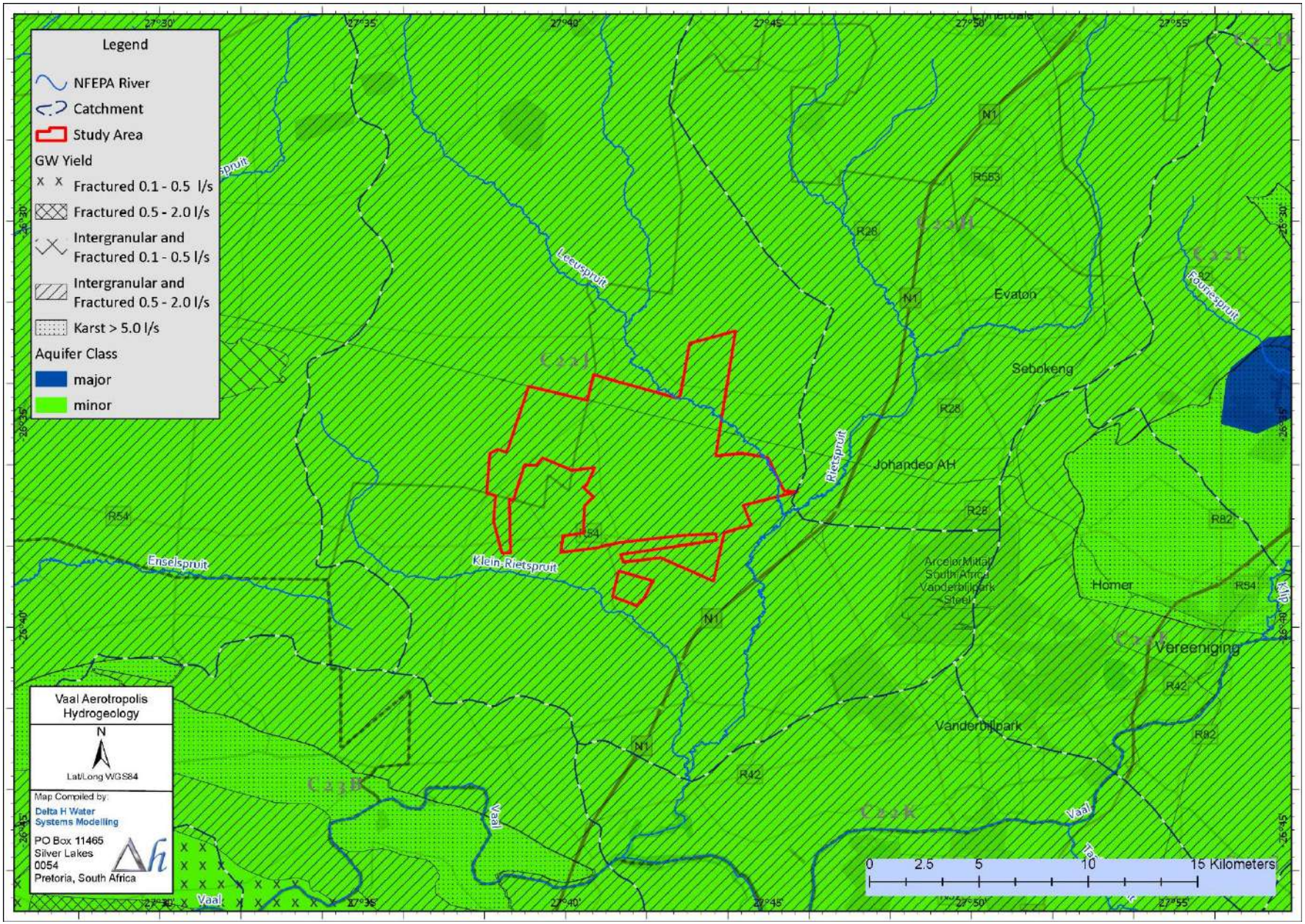

Figure 4-2: Aquifer classification.

5. GEOHYDROLOGICAL IMPACTS

5.1. SITE LAYOUT

The Vaal Aerotropolis is envisioned for the proposed development of: NOTE: The infrastructure or layout is not final and should be seen as preliminary plans.

- Airport
  - Airport infrastructure with a single runway (± 4 800m)
  - Airport Trade Zone
  - Cargo Terminal with a capacity of 120 000 tons p/a
  - Passenger Terminal Building with a capacity of 6 million people p/a
  - Parking facilities
  - Air Traffic Navigation Services (ATNS) Tower
  - Aircraft Rescue and Firefighting (ARFF) Station
  - Fuel farm.
- AeroCity
  - Hotel
  - Office Space
  - IT village
  - Head Quarters for International Companies
  - Entertainment Resort
- Agrizone
  - Hydroponics under glass
  - Agrilab
  - Terminal for export of live-stock
  - Production of cut flowers for export
  - Mushroom Propagation Lab

5.2. METHODOLOGY (IMPACT ASSESSMENT CRITERIA)

The criteria for the description and assessment of environmental impacts were drawn from the EIA Guidelines, National Environmental Management Act (Act No. 107 of 1998): EIA Regulations (2014) and as amended from time to time. The level of detail as depicted in the EIA Guidelines was fine-tuned by assigning specific values to each impact. To establish a coherent framework within which all impacts could be objectively assessed, it was necessary to establish a rating system, which was applied consistently to all the criteria. For such purposes, each aspect was assigned a value, ranging from one (1) to five (5), depending on its definition. This assessment is a relative evaluation within the context of all the activities and the other impacts within the framework of the project. An explanation of the impact assessment criteria is defined in Table 5.1

The status of the impacts and degree of confidence with respect to the assessment of the significance is stated as follows:

- **Status of the impact:** A description as to whether the impact would be positive (a benefit), negative (a cost), or neutral.
- **Degree of confidence in predictions:** The degree of confidence in the predictions, based on the availability of information and specialist knowledge.

Table 5.1: Impact Assessment Criteria.

EXTENT	
Classification of the physical and spatial scale of the impact	
Footprint	The impacted area extends only as far as the activity, such as footprint occurring within the total site area.
Site	The impact could affect the whole, or a significant portion of the site.
Regional	The impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns.
National	The impact could have an effect that expands throughout the country (South Africa).
International	Where the impact has international ramifications that extend beyond the boundaries of South Africa.
DURATION	
The lifetime of the impact that is measured in relation to the lifetime of the proposed development.	
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than that of the construction phase.
Short to Medium term	The impact will be relevant through to the end of a construction phase (1.5 years).
Medium term	The impact will last up to the end of the development phases, where after it will be entirely negated.
Long term	The impact will continue or last for the entire operational lifetime i.e. exceed 30 years of the development, but will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
INTENSITY	
The intensity of the impact is considered by examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning, or slightly alters the environment itself. The intensity is rated as	
Low	The impact alters the affected environment in such a way that the natural processes or functions are not affected.
Medium	The affected environment is altered, but functions and processes continue, albeit in a modified way.
High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.
PROBABILITY	
This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:	
Improbable	The possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is zero (0 %).
Possible	The possibility of the impact occurring is very low, due either to the circumstances, design or experience. The chances of this impact occurring is defined as 25 %.
Likely	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact occurring is defined as 50 %.
Highly Likely	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75 %.
Definite	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100 %.

Other aspects to take into consideration in the specialist studies are:

- Impacts should be described both before and after the proposed mitigation and management measures have been implemented.
- All impacts should be evaluated for the full lifecycle of the proposed development, including construction, operation, and decommissioning.
- The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region.
- The specialist studies must attempt to quantify the magnitude of potential impacts (direct and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact.

5.2.1. Mitigation

The impacts that are generated by the development can be minimised if measures are implemented to reduce the impacts. The mitigation measures ensure that the development considers the environment and the predicted impacts to minimise impacts and achieve sustainable development.

5.2.1.1. *Determination of Significance-Without Mitigation*

Significance is determined through a synthesis of impact characteristics as described in the above paragraphs. It provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. The significance of the impact "without mitigation" is the prime determinant of the nature and degree of mitigation required. Where the impact is positive, significance is noted as "positive". Significance is rated on the following scale:

Table 5.2: Significance-Without Mitigation.

NO SIGNIFICANCE	The impact is not substantial and does not require any mitigation action.
LOW	The impact is of little importance, but may require limited mitigation.
MEDIUM	The impact is of importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
HIGH	The impact is of major importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

5.2.1.2. *Determination of Significance- With Mitigation*

Determination of significance refers to the foreseeable significance of the impact after the successful implementation of the necessary mitigation measures. Significance with mitigation is rated on the following scale:

Table 5.3: Significance-With Mitigation.

NO SIGNIFICANCE	The impact will be mitigated to the point where it is regarded as insubstantial.
LOW	The impact will be mitigated to the point where it is of limited importance.
LOW TO MEDIUM	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels.
MEDIUM	Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.
MEDIUM TO HIGH	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
HIGH	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

5.2.2. Assessment Weighting

Each aspect within an impact description was assigned a series of quantitative criteria. Such criteria are likely to differ during the different stages of the project's life cycle. To establish a defined base upon which it becomes feasible to make an informed decision, it was necessary to weigh and rank all the criteria.

5.2.2.1. *Ranking, Weighting and Scaling*

For each impact under scrutiny, a scaled weighting factor is attached to each respective impact. The purpose of assigning weights serves to highlight those aspects considered the most critical to the various stakeholders and ensure that each specialist's element of bias is considered. The weighting factor also provides a means whereby the impact assessor can successfully deal with the complexities that exist between the different impacts and associated aspect criteria.
Simply, such a weighting factor is indicative of the importance of the impact in terms of the potential effect that it could have on the surrounding environment. Therefore, the aspects considered to have a relatively high value will score a relatively higher weighting than that which is of lower importance.

Table 5-4: Description of assessment parameters with its respective weighting.

EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR (WF)		SIGNIFICANCE RATING (SR)	
Footprint	1	Short term	1	Low	1	Probable	1	Low	1	Low	0-19
Site	2	Short to Medium	2			Possible	2	Low to Medium	2	Low to Medium	20-39
Regional	3	Medium term	3	Medium	3	Likely	3	Medium	3	Medium	40-59
National	4	Long term	4			Highly Likely	4	Medium to High	4	Medium to High	60-79
International	5	Permanent	5	High	5	Definite	5	High	5	High	80-100

MITIGATION EFFICIENCY (ME)		SIGNIFICANCE FOLLOWING MITIGATION (SFM)	
High	0.2	Low	0 - 19
Medium to High	0.4	Low to Medium	20 - 39
Medium	0.6	Medium	40 - 59
Low to Medium	0.8	Medium to High	60 - 79
Low	1.0	High	80 - 100

5.2.2.2. Identifying the Potential Impacts Without Mitigation Measures (WOM)

Following the assignment of the necessary weights to the respective aspects, criteria are summed and multiplied by their assigned weightings, resulting in a value for each impact (prior to the implementation of mitigation measures).

Equation 1:

Significance Rating (WOM) = (Extent + Intensity + Duration + Probability) x Weighting Factor

5.2.2.3. Identifying the Potential Impacts with Mitigation Measures (WM)

To gain a comprehensive understanding of the overall significance of the impact, after implementation of the mitigation measures, it was necessary to re-evaluate the impact.

5.2.2.4. Mitigation Efficiency (ME)

The most effective means of deriving a quantitative value of mitigated impacts is to assign each significance rating value (WOM) a mitigation efficiency (ME) rating. The allocation of such a rating is a measure of the efficiency and effectiveness, as identified through professional experience and empirical evidence of how effectively the proposed mitigation measures will manage the impact.

Thus, the lower the assigned value the greater the effectiveness of the proposed mitigation measures and subsequently, the lower the impacts with mitigation.

Equation 2:

Significance Rating (WM) = Significance Rating (WOM) x Mitigation Efficiency

or WM = WOM x ME

5.2.2.5. Significance Following Mitigation (SFM)

The significance of the impact after the mitigation measures are taken into consideration. The efficiency of the mitigation measure determines the significance of the impact. The level of impact is therefore seen in its entirety with all considerations considered.

5.3. CONSTRUCTION PHASE

5.3.1. Impacts on Groundwater Quality

The only foreseeable potential impact on the ambient groundwater quality during the construction phase is due to accidental hydrocarbon or other chemical spillages from the construction vehicles. Such spillages are localised, quickly reversible if properly contained and/or excavated, and unlikely to occur. The significance of groundwater being negatively impacted by accidental spillages is rated as “low” during the short construction phase before and after mitigation.

5.3.2. Impacts on Groundwater Quantity and Flow Regime

The construction of the Vaal Aerotropolis will lead to a localised reduced recharge rate due to surface compaction by construction vehicles and preparation of drains. However, no measurable reduction of groundwater in storage is expected. Since the construction of the areas does not entail groundwater abstractions, no impacts on groundwater in storage are expected. Only insignificant impacts on the regional groundwater flow regime are therefore foreseen during the construction phase.

5.3.3. Groundwater Management

The Vaal Aerotroplis should develop and maintain a Standard Operating Procedure to contain and remediate any accidental hydrocarbon or other chemical spillages. Such containment can be achieved by utilisation of spill kits and/or excavation of affected soil with subsequent disposal at an accredited disposal site. Staff should be trained in the appropriate usage of spill kits and excavation of affected soils. Any excavation of affected soils should be supervised by the Environmental Site Officer.

5.4. OPERATIONAL PHASE

The significance rating of the groundwater impacts during the operational phase is provided in Table 5-5.

5.4.1. Impacts on Groundwater Quality

The proposed infrastructure storing potential hazardous chemicals, hydrocarbons, sewage, etc, e.g. storing fossil fuels at the Fuel Farm, could lead to leakage or seepage from these storage units. Such seepage or leakages will be localised, quickly reversible if properly contained and/or excavated, and unlikely to occur. The significance of groundwater being negatively impacted by seepage or leakage is rated as “low” during the operational phase before and after mitigation.

5.4.2. Impacts on Groundwater Quantity and Flow Regime

It is proposed that the Agrizone will make use of groundwater abstraction resulting in local changes of the volume of groundwater in storage and flow directions due to lowering the groundwater table. No abstraction volumes are currently available, and therefore the impacts associated with the abstraction from the boreholes can’t be related to scale or extent.

5.4.3. Groundwater Management

Should environmentally unacceptable concentrations of constituents of concern be identified during monitoring of the seepage, hydraulic plume containment should be initiated when and where required. Furthermore, should the lowering of the groundwater table impact on any third-party users, supply of potable water or developing a water resource for such impacts users should be implemented.

5.5. POST CLOSURE

Based on the information made availed it is assumed that the site will not be decommissioned in the near future.

5.5.1. Groundwater Management

Monitoring of the site should be implemented that focus on both groundwater quality and quantity.

Table 5-5: Significance rating of groundwater impacts associated with the Mineral Exco wash plant.

Aspect	Potential Impact	Nature	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Pre-Mitigation	Mitigation measures	Mitigation Efficiency	Significance Post-Mitigation
Construction Phase											
Accidental spillages	Deterioration of shallow groundwater quality	Negative	1	1	5	2	2	18	Develop and maintain a Standard Operating Procedure to contain and remediate any accidental hydrocarbon or other chemical spillages. Spill kits should be made available and used in the event of a spill. Contain spillage, excavated, and dispose of contaminated material/soil where required at an accredited disposal site.	0.6	10.8
Operational Phase											
Leakage from pollution sources	Deterioration of shallow groundwater quality	Negative	1	2	5	2	2	20	Effective storage holding tanks, Continuous monitoring of source and downstream plume migration using proposed monitoring network.	0.6	12
Borehole abstraction for groundwater use	Lowering of water table with a reduction in groundwater baseflow and 3rd party borehole yields	Negative	1	1	3	3	2	16	Monitoring of borehole abstraction rates (daily) Monitoring of water levels (quarterly) within the predicted zone of dewatering	0.8	12.8

5.6. MONITORING PARAMETERS AND FREQUENCY

A groundwater monitoring programme (spatial distribution, etc) should be implemented after finalisation of the infrastructure layout. The following overall monitoring plan is provided.

5.6.1. Monitoring parameter

A list of groundwater parameters to be monitored is given in Table 5-6.

Table 5-6: List of groundwater monitoring parameter.

Description	Parameter
Potential heads	Static groundwater levels
Physico-chemical parameter, laboratory	pH, Electrical Conductivity (EC), Temperature, Redox-Potential (mV)
Major elements	Ca, Mg, Na, K, Total Alkalinity, SO_4, NO_3, Cl, Total Dissolved Solids (TDS)
Trace elements	Al, As, B, Ba, Cr, Cu, F, Fe, Mn, Mo, Ni, Pb
Organic compounds	Hydrocarbons, Total Petroleum Hydrocarbons (TPH / BTEX- GRO & DRO), Oil & Grease (Water and Soil), Total Organic Carbon (TOC), Dissolved Organic Carbon (DOC)
Microbiology	Heterotrophic Plate Count, Total Coliform Bacteria, Faecal Coliform Bacteria, E. coli

The following recommendations are given regarding the monitoring protocol for the development:

- The static groundwater levels should be measured in the boreholes without any preceding abstractions (due to sampling).
- The boreholes should be purged (withdraw approximately three times the stagnant water within the borehole) until the physic-chemical parameters stabilize and are determined. Samples for analysis should be retrieved after stabilization of the field parameters.
- Suitable sample containers should be utilised for the sample collection, i.e. plastic or glass containers for major elements and plastic or boron-glass containers for minor and trace elements.
- Sample collection including determined physic-chemical parameter should be documented in a sample protocol for each site and signed off by the sampling personnel as part of the chain of custody.
- The samples should be delivered to an accredited laboratory as soon as possible for analysis of the above parameters.

5.6.2. Monitoring frequency

The following monitoring frequencies are recommended during the construction and Life of Mine:

- In-line flow meters for monitoring water abstraction from the borehole: Daily
- Water levels: Monthly
- Water qualities: Quarterly

The monitoring frequency should continue into post-closure until water levels and qualities stabilise (or reach environmentally acceptable levels).

6. CONCLUSIONS

Delta-H was appointed to conduct a hydrogeological study forming part of an Environmental Impact Assessment (EIA) for the proposed wash plant.

Aquifer Characteristics

The area is characterised by intergranular and fractures aquifer system with a typical potential yield of 0.5 – 2.0 litres per second, consisting of sedimentary deposits, sandstone, shale and mudstones. The aquifer is seen as an unconfined or semi-confined shallow weathered aquifer or hydro-stratigraphic zone. Due to direct rainfall recharge and dynamic groundwater flow through the unconfined aquifer in weathered rock, the water quality is generally good, but in the absence of an overlying confining layer also vulnerable to pollution. According to this estimate, a medium-level groundwater protection is required for the fractured aquifer. Reasonable groundwater protection measures are recommended to ensure that no cumulative pollution affects the aquifer, even in the long term. DWS's water quality management objectives are to protect human health and the environment. Therefore, the significance of this aquifer classification is that if any potential risk exists, measures must be taken to limit the risk to the environment, which in this case is the protection of the underlying aquifer.

Baseline Data

A total of 43 boreholes were identified during the hydrocensus. Groundwater is considered as the only resource for water supply to the area. Groundwater levels ranged from 0.64 mbgl to 6.8 mbgl, with an average of 2.9 mbgl.

The expected ambient groundwater quality, derived from five boreholes, is of good quality with a pH around 7.4, with slight elevated mineralisation (EC up to 118 mS/m). Nitrate as N concentrations are elevated. The nitrogen ion source could be attributed to agricultural practices. The boreholes are characterised by a Mg/Ca-HCO_3 Mg/Ca-Cl types.

Impact Assessment

Impacts om groundwater is associated with accidental spillage of e.g. hydrocarbons during construction and operation phases. Also, potential leakage (seepage) of pollution sources such as fuel tanks and sewage works is also foreseen. Develop and maintain a Standard Operating Procedure to contain and remediate any accidental hydrocarbon or other chemical spillages. Spill kits should be made available and used in the event of a spill. Contain spillage, excavated, and dispose of contaminated material/soil where required at an accredited disposal site.

Impacts associated with the proposed groundwater abstraction from the boreholes is expected to be limited, depending on the volume of being utilised. Lowering of water table with a reduction in groundwater baseflow and 3rd party borehole yields is foreseen.

7. REFERENCES

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8. DECLARATION OF INDEPENDENCE

Delta-H Water System Modelling Pty Ltd (Delta H) and its associates have no direct or indirect business, financial, personal or other interests in the activity, application or appeal other than fair remuneration for work performed in connection with that activity, application or appeal and there are no circumstances that may compromise the objectivity of the persons performing such work. The remuneration of the services provided by Delta-H is in no way contingent upon the conclusions or opinions expressed in this report.

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Aartvlei-1

Aartvlei-2

Blesbok-1

Blesbok-2

Klipfontein-1

Klipkop-1

Klipkop-2

Klipkop-3

Klipkop-4

Rietkuil-1

Tweefontien-1

Tweefontien-2

Tweefontien-3

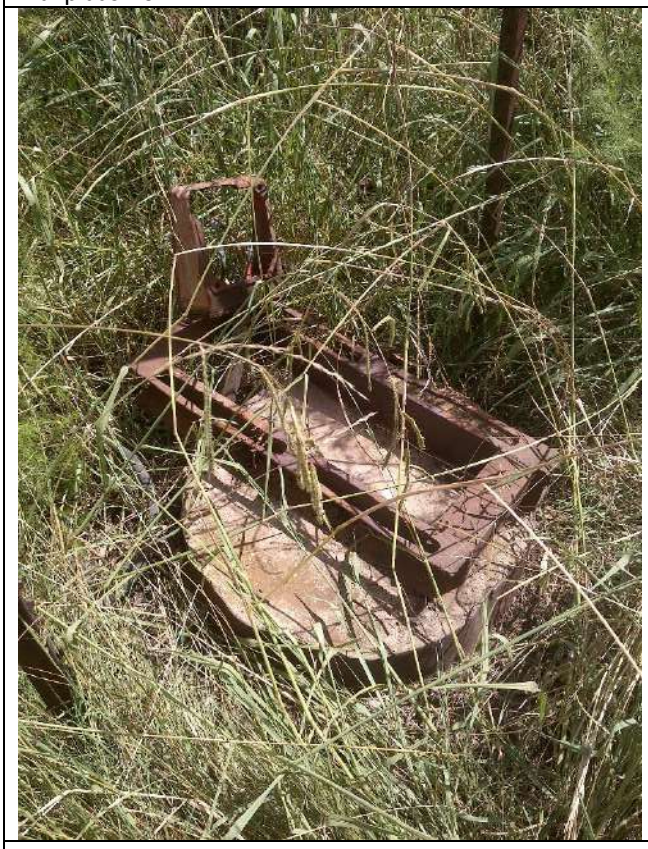
Tweefontien-4

Vlakplaas-6

Vlakplaas-9

Vlakplaas-10

Vlakplaas-1



Vlakplaas-2

Vlakplaas-3

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Vlakplaas-7

Vlakplaas-8

Vlakplaas-11

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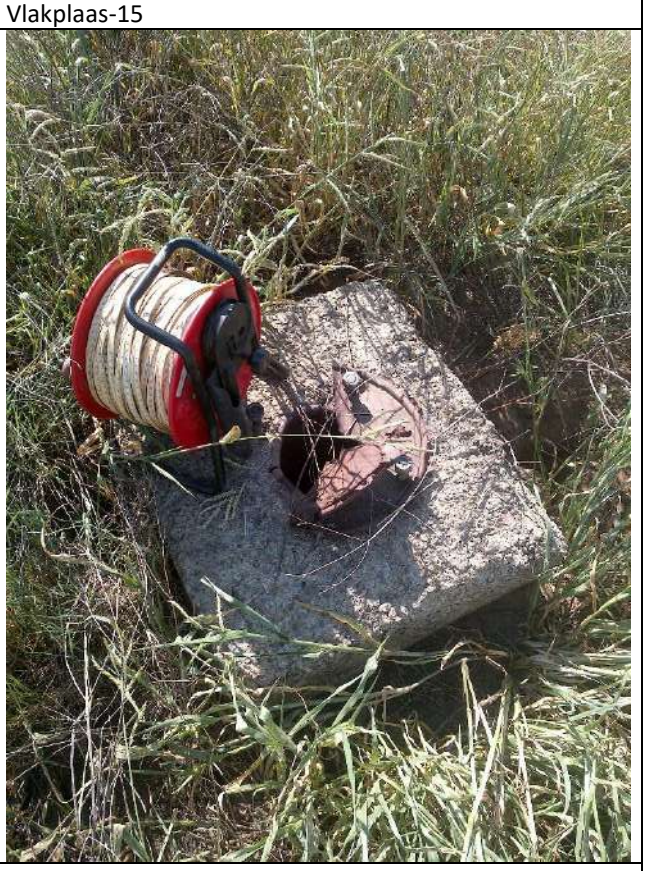
Vlakplaas-16



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Vlakplaas-18

Vlakplaas-19

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23B De Havilland Crescent
Persequor Techno Park
Meiring Naudé Drive
Pretoria

P.O. Box 283, Persequor Park, 0020
Tel: +2712 - 349 - 1066
Fax: +2786 - 654 - 2570
e-mail: admin@waterlab.co.za

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CERTIFICATE OF ANALYSES

GENERAL WATER QUALITY PARAMETERS

Date received: 2024-02-16 **Date completed:** 2024-03-05
Project number: 1000 **Report number:** 129392 **Order number:** Vaal Aerotropolis

Client name: Delta h Water Systems **Contact person:** Dr. M. Holland
Address: P.O Box 11465, Silverlakes, Pretoria 0054 **e-mail:** martin@delta-h.co.za
Telephone: **Facsimile:** **Mobile:** 082 497 9088

Analyses in mg/ℓ (Unless specified otherwise)		Method Identification	Sample Identification			
			Rietkuil-1	Klipkop-2	Tweefontein-1	Aartsvlei-1
Sample Number			23-37656	23-37657	23-37658	23-37659
Date/Time Sampled			N/A	N/A	N/A	N/A
pH - Value @ 25 ºC	A	WLAB065	7.3	7.5	7.4	7.4
Electrical Conductivity in mS/m @ 25°C	A	WLAB065	99.1	118	77.4	36.5
Total Dissolved Solids @ 180°C	A	WLAB003	674	782	496	254
Turbidity in N.T.U	A	WLAB005	79	0.6	0.4	0.6
Total Alkalinity as $CaCO_3$	A	WLAB007	180	212	104	96
Chloride as Cl	A	WLAB046	85	116	111	10
Sulphate as SO_4	A	WLAB046	200	145	<2	9
Fluoride as F	A	WLAB014	0.3	<0.2	<0.2	0.2
Nitrate as N	A	WLAB046	2.4	26	21	15
Ortho Phosphate as P	A	WLAB046	<0.1	0.1	0.1	<0.1
Free and Saline Ammonia as N	A	WLAB046	<0.1	<0.1	<0.1	<0.1
Semi Quantitative ICP-Scan (Dissolved	N		See Attached	See Attached	See Attached	See Attached
% Anion-Cation Balance	N	---	99.3	97.7	97.0	99.6

J. Ngobeza - Chemical Technical Signatory

Start date of analysis: 2024/02/16 Date of Issue: 2024/03/05

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Persequor Techno Park
Meiring Naudé Drive
Pretoria

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Project number: 1000 **Report number:** 129392 **Order number:** Vaal Aerotropolis

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Address: P.O Box 11465, Silverlakes, Pretoria 0054 **e-mail:** martin@delta-h.co.za

Telephone: **Facsimile:** **Mobile:** 082 497 9088

Analyses in mg/ℓ (Unless specified otherwise)		**Method Identification**	Sample Identification
			Vlakplaas-1
Sample Number			23-37660
Date/Time Sampled			N/A
pH - Value @ 25 ºC	A	WLAB065	7.4
Electrical Conductivity in mS/m @ 25°C	A	WLAB065	62.0
Total Dissolved Solids @ 180°C	A	WLAB003	438
Turbidity in N.T.U	A	WLAB005	0.1
Total Alkalinity as $CaCO_3$	A	WLAB007	220
Chloride as Cl	A	WLAB046	25
Sulphate as SO_4	A	WLAB046	13
Fluoride as F	A	WLAB014	<0.2
Nitrate as N	A	WLAB046	17
Ortho Phosphate as P	A	WLAB046	0.1
Free and Saline Ammonia as N	A	WLAB046	<0.1
Semi Quantitative ICP-Scan (Dissolved	N		See Attached
% Anion-Cation Balance	N	---	98.4

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Semi Quantitative ICP-Scan (Dissolved)

Analyses in mg/ℓ (Unless specified otherwise)		Method Identification	Sample Identification			
			Rietkuil-1	Klipkop-2	Tweefontein-1	Aartsvlei-1
Sample Number			23-37656	23-37657	23-37658	23-37659
Date/Time Sampled			N/A	N/A	N/A	N/A
Sodium as Na	N	WLAB015	34	36	27	25
Potassium as K	N	WLAB015	23	4.2	6.6	4.6
Calcium as Ca	N	WLAB015	66	110	55	17
Magnesium as Mg	N	WLAB015	59	57	37	17
Aluminium as Al (Dissolved)	N	WLAB015	<0.100	0.120	<0.100	<0.100
Antimony as Sb (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Arsenic as As (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Barium as Ba (Dissolved)	N	WLAB050	0.043	0.059	0.013	0.017
Beryllium as Be (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Bismuth as Bi (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Boron as B (Dissolved)	N	WLAB050	0.032	<0.025	<0.025	<0.025
Cadmium as Cd (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Caesium as Cs (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Cerium as Ce (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Chromium as Cr (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Cobalt as Co (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Copper as Cu (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Dysprosium as Dy (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Erbium as Er (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Europium as Eu (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Gadolinium as Gd (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Galium as Ga (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Germanium as Ge (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Gold as Au (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Hafnium as Hf (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Holmium as Ho (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Indium as In (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Iridium as Ir (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010

J. Ngobeza - Chemical Technical Signatory

Start date of analysis: 2024/02/16 Date of Issue: 2024/03/05

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Meiring Naudé Drive
Pretoria

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Tel: +2712 - 349 - 1066
Fax: +2786 - 654 - 2570
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Project number: 1000 **Report number:** 129392 **Order number:** Vaal Aerotropolis

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Address: P.O Box 11465, Silverlakes, Pretoria 0054 **e-mail:** martin@delta-h.co.za

Telephone: **Facsimile:** **Mobile:** 082 497 9088

Analyses in mg/ℓ (Unless specified otherwise)		Method Identification	Sample Identification			
			Rietkuil-1	Klipkop-2	Tweefontein-1	Aartsvlei-1
Sample Number			23-37656	23-37657	23-37658	23-37659
Date/Time Sampled			N/A	N/A	N/A	N/A
Iron as Fe (Dissolved)	N	WLAB015	<0.025	<0.025	<0.025	<0.025
Lanthanum as La (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Lead as Pb (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Lithium as Li (Dissolved)	N	WLAB050	<0.010	0.011	0.010	0.012
Lutetium as Lu (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Manganese as Mn (Dissolved)	N	WLAB015	0.558	<0.025	<0.025	<0.025
Mercury as Hg (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Molybdenum as Mo (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Neodynium as Nd (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Nickel as Ni (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Niobium as Nb (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Osmium as Os (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Palladium as Pd (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Phosphorus as P (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Platinum as Pt (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Praseodymium as Pr (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Rhodium as Rh (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Rubidium as Rb (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Ruthenium as Ru (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Samarium as Sm (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Scandium as Sc (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Selenium as Se (Dissolved)	N	WLAB050	<0.010	0.010	<0.010	<0.010
Silicon as Si (Dissolved)	N	WLAB015	6.7	14.8	16.1	16.2
Silver as Ag (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Strontium as Sr (Dissolved)	N	WLAB050	0.299	0.318	0.243	0.132
Tantalum as Ta (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Tellurium as Te (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Terbium as Tb (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Thallium as Tl (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010

J. Ngobeza - Chemical Technical Signatory

Start date of analysis: 2024/02/16 Date of Issue: 2024/03/05

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Analyses in mg/ℓ (Unless specified otherwise)		Method Identification	Sample Identification			
			Rietkuil-1	Klipkop-2	Tweefontein-1	Aartsvlei-1
Sample Number			23-37656	23-37657	23-37658	23-37659
Date/Time Sampled			N/A	N/A	N/A	N/A
Thorium as Th (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Thulium as Tm (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Tin as Sn (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Titanium as Ti (Dissolved)	N	WLAB050	0.027	0.042	0.023	<0.010
Tungsten as W (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Uranium as U (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Vanadium as V (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Ytterbium as Yb (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Yttrium as Y (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010
Zinc as Zn (Dissolved)	N	WLAB050	<0.010	<0.010	0.010	<0.010
Zirconium as Zr (Dissolved)	N	WLAB050	<0.010	<0.010	<0.010	<0.010

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Analyses in mg/ℓ (Unless specified otherwise)		**Method Identification**	Sample Identification
			Vlakplaas-1
Sample Number			23-37660
Date/Time Sampled			N/A
Sodium as Na	N	WLAB015	23
Potassium as K	N	WLAB015	4.4
Calcium as Ca	N	WLAB015	53
Magnesium as Mg	N	WLAB015	32
Aluminium as Al (Dissolved)	N	WLAB015	<0.100
Antimony as Sb (Dissolved)	N	WLAB050	<0.010
Arsenic as As (Dissolved)	N	WLAB050	<0.010
Barium as Ba (Dissolved)	N	WLAB050	0.021
Beryllium as Be (Dissolved)	N	WLAB050	<0.010
Bismuth as Bi (Dissolved)	N	WLAB050	<0.010
Boron as B (Dissolved)	N	WLAB050	<0.025
Cadmium as Cd (Dissolved)	N	WLAB050	<0.010
Caesium as Cs (Dissolved)	N	WLAB050	<0.010
Cerium as Ce (Dissolved)	N	WLAB050	<0.010
Chromium as Cr (Dissolved)	N	WLAB050	<0.010
Cobalt as Co (Dissolved)	N	WLAB050	<0.010
Copper as Cu (Dissolved)	N	WLAB050	<0.010
Dysprosium as Dy (Dissolved)	N	WLAB050	<0.010
Erbium as Er (Dissolved)	N	WLAB050	<0.010
Europium as Eu (Dissolved)	N	WLAB050	<0.010
Gadolinium as Gd (Dissolved)	N	WLAB050	<0.010
Galium as Ga (Dissolved)	N	WLAB050	<0.010
Germanium as Ge (Dissolved)	N	WLAB050	<0.010
Gold as Au (Dissolved)	N	WLAB050	<0.010
Hafnium as Hf (Dissolved)	N	WLAB050	<0.010
Holmium as Ho (Dissolved)	N	WLAB050	<0.010
Indium as In (Dissolved)	N	WLAB050	<0.010
Iridium as Ir (Dissolved)	N	WLAB050	<0.010

J. Ngobeza - Chemical Technical Signatory

Start date of analysis: 2024/02/16 Date of Issue: 2024/03/05

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Sampled by: Client

WATERLAB (Pty) Ltd

Reg. No.: 1983/009165/07 V.A.T. No.: 4130107891

23B De Havilland Crescent
Persequor Techno Park
Meiring Naudé Drive
Pretoria

P.O. Box 283, Persequor Park, 0020
Tel: +2712 - 349 - 1066
Fax: +2786 - 654 - 2570
e-mail: admin@waterlab.co.za

T0391

CERTIFICATE OF ANALYSES

GENERAL WATER QUALITY PARAMETERS

Date received: 2024-02-16 **Date completed:** 2024-03-05

Project number: 1000 **Report number:** 129392 **Order number:** Vaal Aerotropolis

Client name: Delta h Water Systems **Contact person:** Dr. M. Holland

Address: P.O Box 11465, Silverlakes, Pretoria 0054 **e-mail:** martin@delta-h.co.za

Telephone: **Facsimile:** **Mobile:** 082 497 9088

Analyses in mg/ℓ (Unless specified otherwise)		**Method Identification**	Sample Identification
			Vlakplaas-1
Sample Number			23-37660
Date/Time Sampled			N/A
Iron as Fe (Dissolved)	N	WLAB015	<0.025
Lanthanum as La (Dissolved)	N	WLAB050	<0.010
Lead as Pb (Dissolved)	N	WLAB050	<0.010
Lithium as Li (Dissolved)	N	WLAB050	<0.010
Lutetium as Lu (Dissolved)	N	WLAB050	<0.010
Manganese as Mn (Dissolved)	N	WLAB015	<0.025
Mercury as Hg (Dissolved)	N	WLAB050	<0.010
Molybdenum as Mo (Dissolved)	N	WLAB050	<0.010
Neodynium as Nd (Dissolved)	N	WLAB050	<0.010
Nickel as Ni (Dissolved)	N	WLAB050	<0.010
Niobium as Nb (Dissolved)	N	WLAB050	<0.010
Osmium as Os (Dissolved)	N	WLAB050	<0.010
Palladium as Pd (Dissolved)	N	WLAB050	<0.010
Phosphorus as P (Dissolved)	N	WLAB050	<0.010
Platinum as Pt (Dissolved)	N	WLAB050	<0.010
Praseodymium as Pr (Dissolved)	N	WLAB050	<0.010
Rhodium as Rh (Dissolved)	N	WLAB050	<0.010
Rubidium as Rb (Dissolved)	N	WLAB050	<0.010
Ruthenium as Ru (Dissolved)	N	WLAB050	<0.010
Samarium as Sm (Dissolved)	N	WLAB050	<0.010
Scandium as Sc (Dissolved)	N	WLAB050	<0.010
Selenium as Se (Dissolved)	N	WLAB050	<0.010
Silicon as Si (Dissolved)	N	WLAB015	22
Silver as Ag (Dissolved)	N	WLAB050	<0.010
Strontium as Sr (Dissolved)	N	WLAB050	0.196
Tantalum as Ta (Dissolved)	N	WLAB050	<0.010
Tellurium as Te (Dissolved)	N	WLAB050	<0.010
Terbium as Tb (Dissolved)	N	WLAB050	<0.010
Thallium as Tl (Dissolved)	N	WLAB050	<0.010

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23B De Havilland Crescent
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P.O. Box 283, Persequor Park, 0020
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Telephone: **Facsimile:** **Mobile:** 082 497 9088

Analyses in mg/ℓ (Unless specified otherwise)		**Method Identification**	Sample Identification
			Vlakplaas-1
Sample Number			23-37660
Date/Time Sampled			N/A
Thorium as Th (Dissolved)	N	WLAB050	<0.010
Thulium as Tm (Dissolved)	N	WLAB050	<0.010
Tin as Sn (Dissolved)	N	WLAB050	<0.010
Titanium as Ti (Dissolved)	N	WLAB050	0.019
Tungsten as W (Dissolved)	N	WLAB050	<0.010
Uranium as U (Dissolved)	N	WLAB050	<0.010
Vanadium as V (Dissolved)	N	WLAB050	<0.010
Ytterbium as Yb (Dissolved)	N	WLAB050	<0.010
Yttrium as Y (Dissolved)	N	WLAB050	<0.010
Zinc as Zn (Dissolved)	N	WLAB050	<0.010
Zirconium as Zr (Dissolved)	N	WLAB050	<0.010

J. Ngobeza - Chemical Technical Signatory

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VAAL AEROTROPOLIS DESIGN (PTY) LTD

BULK SEWER SERVICES REPORT

VAAL AEROTROPOLIS PROJECT

SEPTEMBER 2026

PROJECT NO: 43103108

Document Distribution

Vaal Aerotropolis Design (Pty) Ltd

Bulk Sewer Servies Report

Vaal Aerotropolis Project

Date: September 2026

Project No.: 43103108

Prepared for

Vaal Aerotropolis Design (Pty) Ltd

193 Bryanston Drive,
The Braes Office Park Project Hous,
Bryanston, Gauteng,
2191

Submitted to

Vaal Aerotropolis Design (Pty) Ltd

193 Bryanston Drive,
The Braes Office Park Project Hous,
Bryanston, Gauteng,
2191

Prepared by

WSP Group Africa (Pty) Ltd
Building 1, Maxwell Office Park,
Magwa Cres, Midrand,
1685

Quality control	Name	Date	Signature
Prepared by:	WSP Engineering Project Team	11 Sept 2026	
Reviewed by:	Kosikee Emma-Iwuoha (Pr.Eng) Civil Engineer	11 Sept 2026	
Approved by:	John Rammutla (Pr.Eng) Project Manager	11 Sept 2026	

Revisions

Rev	Date	Details
1	2025-04-08	Updates to the report
2	2026-05-20	Updates to the report
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4	2026-09-11	Updates to the report

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Appendix A – Proposed Bulk Sewer Reticulation Network Layout Plan
Appendix B – Proposed Bulk Sewer Typical Details

Abbreviations

Abbreviation	Description
AADD	Average Annual Daily Demand
ADWF	Average Dry Weather Flow
COD	Chemical Oxygen Demand
CSIR	Council for Scientific and Industrial Research
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
ELM	Emfuleni Local Municipality
FOG	Fats, Oils and Grease
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
kL/day	Kilolitres per Day
m^3/day	Cubic Metres per Day
ML/day	Megalitres per Day
NEMA	National Environmental Management Act
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
PDWF	Peak Dry Weather Flow
PFD	Process Flow Diagram
PLC	Programmable Logic Controller
PWWF	Peak Wet Weather Flow
SANS	South African National Standard
TRH	Technical Recommendations for Highways
uPVC	Unplasticised Polyvinyl Chloride
UV	Ultraviolet
WRC	Water Research Commission
WSDP	Water Services Development Plan
WWTW	Wastewater Treatment Works
Ø	Diameter

Executive Summary

The Vaal Aerotropolis development requires the implementation of a dedicated bulk sewer system to support the scale and phasing of the project. While Emfuleni Local Municipality continues to implement progressive upgrades and long-term interventions to its sanitation infrastructure, current system constraints and capacity limitations necessitate a self-sufficient, development-led solution for the initial phases of the Aerotropolis.

The proposed sewer strategy adopts a phased and scalable approach, combining on-site wastewater treatment, bulk conveyance infrastructure, and future integration with regional systems as capacity becomes available. Sewer flows are derived from projected water demand, with appropriate allowances for peak conditions and infiltration to ensure conservative and reliable system design.

In Phase 1, a gravity-based collection network will convey wastewater from the airport precinct, Airport City, and initial development zones to an on-site wastewater treatment works (WWTW). The works, with an initial capacity of approximately 1.8 ML/day, will incorporate multi-stage treatment processes to enable compliant discharge and beneficial reuse of treated effluent.

Phase 2 expands the sewer network to accommodate additional development areas and introduces a bulk transfer pipeline to the regional Rietspruit Wastewater Treatment Works. This phase enables a balanced operating approach, with continued on-site treatment complemented by partial off-site conveyance as regional capacity improvements are realised.

In Phase 3, the system will be fully integrated, with further pipeline and treatment capacity upgrades implemented to meet ultimate demand. Surplus flows, beyond the capacity of the on-site treatment plant, will be transferred to the Rietspruit WWTW in alignment with planned regional infrastructure upgrades.

The bulk sewer system is designed to ensure efficient and reliable collection and conveyance, incorporating gravity pipelines, strategically located pump stations where required, and bulk transfer mains. Design parameters provide for peak wet weather conditions and infiltration allowances, ensuring long-term hydraulic performance and operational resilience.

A key feature of the strategy is the on-site WWTW, which enhances system resilience while supporting sustainable resource management. Treated effluent will be reused for non-potable applications such as irrigation and industrial use.

Overall, the proposed bulk sewer services solution provides a robust, phased, and sustainable approach that aligns with the development programme while remaining adaptable to future municipal infrastructure upgrades. This ensures that wastewater management supports, rather than constrains, the long-term growth of the Vaal Aerotropolis, in coordination with broader regional infrastructure planning.

1. Introduction

1.1 Background

The successful development of the Vaal Aerotropolis is intrinsically linked to the provision of reliable, scalable, and sustainable bulk sewer infrastructure. Given the scale, complexity, and phased nature of the development, a forward-looking approach to wastewater management is required, one that ensures immediate functionality while accommodating long-term regional integration. The proposed sewer strategy is therefore designed to deliver a resilient, development-led solution that supports growth, enables resource recovery, and aligns with broader infrastructure planning within the Emfuleni region.

Emfuleni Local Municipality is currently operating within a constrained infrastructure environment, which has resulted in backLogs in maintenance and the need for targeted rehabilitation and upgrading of sanitation infrastructure to support equitable service delivery.

In accordance with the National Norms and Standards for domestic water and sanitation services, the Municipality's immediate priority is focused on ensuring the provision of basic sanitation services across its jurisdiction up to at least 2030. Within this context, the capacity to accommodate additional large-scale developments, such as the Vaal Aerotropolis, remains limited in the short term.

The estimation of wastewater demand for the development is directly linked to the projected water demand, with sewer modelling to be finalised once the Average Annual Daily Demand (AADD) has been confirmed.

According to the Water Services Development Plan (2014), the Municipality currently operates three wastewater treatment works (WWTW's), namely Leeuwkuil, Rietspruit, and Sebokeng, which collectively manage domestic and industrial wastewater and ensure compliance with applicable discharge standards. These facilities are, however, operating under pressure, with certain works exceeding or reaching their design capacities, thereby necessitating planned upgrades to accommodate future demand.

Similarly, sections of the existing bulk sanitation network have reached capacity and require rehabilitation and renewal interventions. The network comprises infrastructure of varying age, with portions dating back several decades, and includes multiple pump stations that are currently operating under high loading conditions. Ongoing assessments have identified priority areas requiring maintenance, refurbishment, and operational optimisation to improve overall system performance.

The Emfuleni Water Master Plan (2013) and subsequent planning documents set out a structured approach to addressing these challenges, including identifying infrastructure gaps, prioritising upgrades, and providing for future development through phased expansion and investment planning. Short-term initiatives focus on rehabilitating existing infrastructure, including pump stations, to reduce the risk of service disruptions, while acknowledging that interim operational risks may persist during the transition period.

In the longer term, strategic interventions are planned to enhance the resilience and efficiency of the regional sanitation system. These include the rationalisation of pump stations, the development of new

gravity conveyance infrastructure along the KLip and Vaal River corridors, and the upgrading or replacement of existing wastewater treatment works, including those serving both Emfuleni and adjacent municipal areas. These interventions are expected to be implemented over a multi-year horizon.

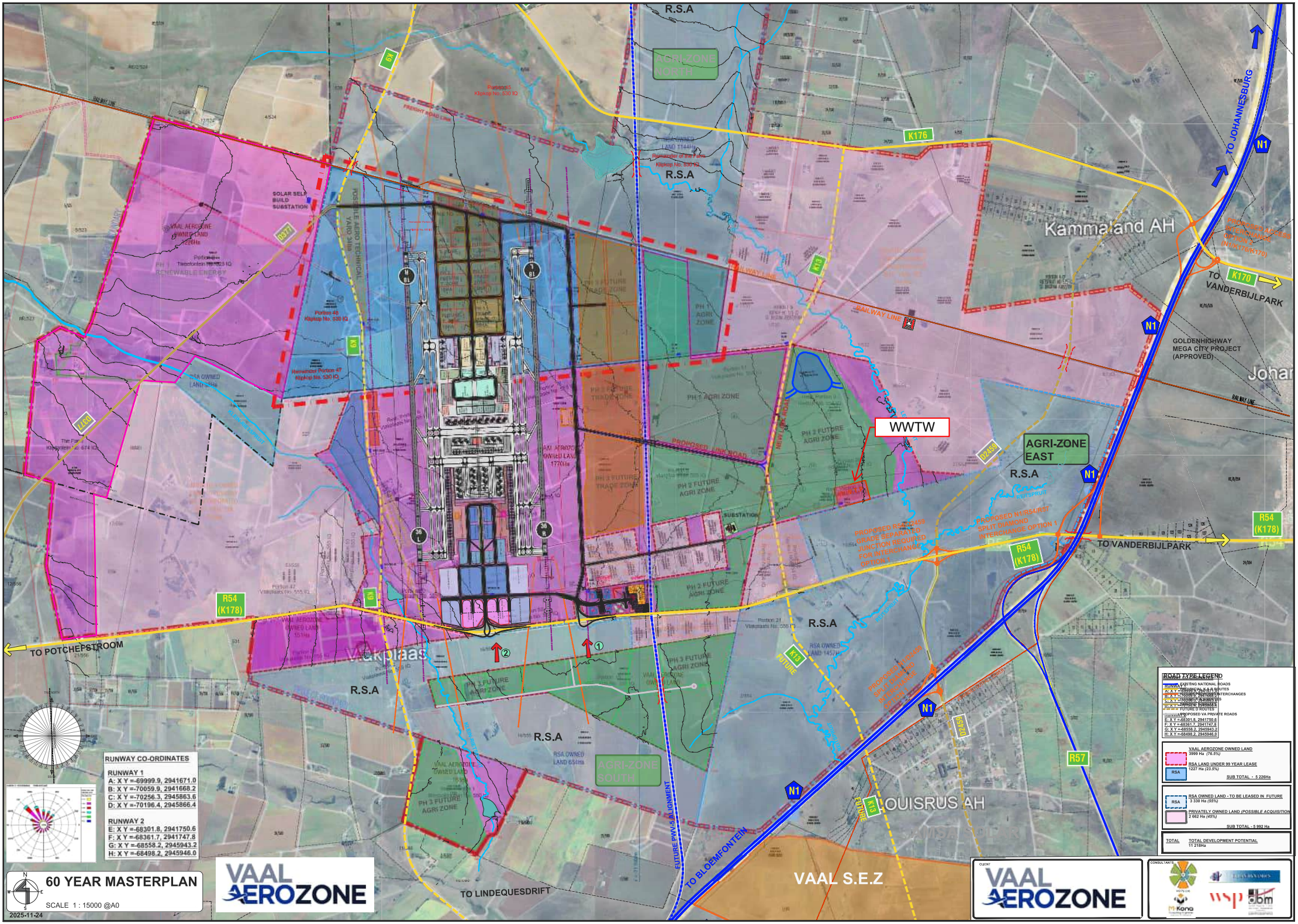
Given these constraints and the development's location, particularly to the west of the N1 where limited bulk sanitation infrastructure currently exists, the Vaal Aerotropolis will require the implementation of dedicated wastewater infrastructure to support its initial and intermediate phases. This approach ensures operational reliability while remaining aligned with the Municipality's longer-term infrastructure planning and future integration opportunities.

1.2 Proposed Location of the WWTW

The location of the proposed wastewater treatment works within the Vaal Aerotropolis development is illustrated in the figure below. The layout has been strategically selected to align with the overall spatial planning of the precinct, taking into account proximity to the primary sewer catchment areas and integration with surrounding land uses. In addition, the works is positioned in close proximity to the designated agricultural zone, enabling efficient utilisation of treated effluent for irrigation purposes.

Figure 1: Location of the WWTW

Refer to next page.


R.S.A
AGRI-ZONE NORTH
K176
TO JOHANNESBURG
N1
Kammaland AH
TO VANDERBIJLPARK
K170
GOLDENHIGHWAY MEGA CITY PROJECT (APPROVED)
RAILWAY LINE
WWTW
AGRI-ZONE EAST
R54 (K178)
TO VANDERBIJLPARK
TO POTCHEFSTROOM
Vaalplaas
AGRI-ZONE SOUTH
LOUISRUS AH
R57
TO BLOEMFONTEIN
TO LINDEQUESDRIFT
VAAL S.E.Z
FUTURE PWV 5 ALIGNMENT
SOLAR SELF BUILD SUBSTATION
SUBSTATION
PROPOSED RSA/VA GRADE SEPARATED JUNCTION REQUIRED FOR INTERCHANGE OPTION 1
PROPOSED N1/R54/R57 SPLIT DIAMOND INTERCHANGE OPTION 1
ROAD TYPE LEGEND
EXISTING NATIONAL ROADS
PROVINCIAL R & D ROUTES
PROPOSED RSA/VA INTERCHANGES
FUTURE ROUTES
PROPOSED VA PRIVATE ROADS
E: X Y =-68301.8, 2941750.6
F: X Y =-68361.7, 2941747.8
G: X Y =-68558.2, 2945943.2
H: X Y =-68498.2, 2945946.0
VAAL AEROZONE OWNED LAND
3999 Ha (76.5%)
RSA LAND UNDER 99 YEAR LEASE
1227 Ha (23.5%)
SUB TOTAL - 5 226Ha
RSA OWNED LAND - TO BE LEASED IN FUTURE
3 330 Ha (55%)
PRIVATELY OWNED LAND (POSSIBLE ACQUISITION)
2 662 Ha (45%)
SUB TOTAL - 5 992 Ha
TOTAL
TOTAL DEVELOPMENT POTENTIAL
11 218Ha
RUNWAY CO-ORDINATES
RUNWAY 1
A: X Y =-69999.9, 2941671.0
B: X Y =-70059.9, 2941668.2
C: X Y =-70256.3, 2945863.6
D: X Y =-70196.4, 2945866.4
RUNWAY 2
E: X Y =-68301.8, 2941750.6
F: X Y =-68361.7, 2941747.8
G: X Y =-68558.2, 2945943.2
H: X Y =-68498.2, 2945946.0
60 YEAR MASTERPLAN
SCALE 1 : 15000 @A0
2025-11-24
VAAL AEROZONE
CLIENT
CONSULTANTS

2. Design Standards & Best Practice

2.1 Design Codes and Standards

2.1.1 Process Design

Notable industry best practice design references have been considered in formulating the design and these (amongst others) are indicated below:

- Wastewater Treatment: Treatment, Disposal, Reuse. 3rd edition, 1991. Metcalf & Eddy. McGraw-Hill Inc
- Theory, design and operation of nutrient removal activated sludge processes. Water Research Commission, 1984.
- Applicable Municipal standards and regulations, including, inter alia:
    - Water Services Development Plan
    - Master Plans
    - Municipal Engineering Design Standards
    - Municipal By-Laws

2.1.2 Civil Design: Onsite Sewerage System

- SANS 10400: National Building Regulations:
    - Part P: Drainage
- The Neighbourhood Planning and Design Guide. Red Book, Section K: Sanitation (2019)6
- Technical Guidelines for the Development of Water & Sanitation Infrastructure. Second Edition, 2004- Department of Water Affairs & Forestry (DWAF)

2.1.3 Lining of Ponds

The regulations which govern the lining of ponds is the “National Environment Management Waste act of 2008- Act No.59 of 2008- Amendments to the national norms and standards for disposal of waste to landfill 2013”

This act is relevant as the objective of this act is to create a waterproof barrier for landfills to stop the leeching of harmful fluids from the landfill into the ground. As per these regulations, a Class C barrier will be used as a basis of design.

3. Sewer Design Characteristics

3.1 Sewer Design Criteria

The sewer design criteria have been established to guide the sizing and performance of the proposed bulk sewer system, ensuring that adequate capacity, hydraulic efficiency, and operational reliability are achieved under both average and peak flow conditions. The sewer design criteria are informed by the Neighbourhood Planning and Design Guide and the Technical Guidelines for the Development of Water & Sanitation Infrastructure, as referenced in Section 2. The key design parameters adopted for the system, including flow assumptions, material specifications, and hydraulic requirements, are summarised in Table 3.1 below.

Table 3.1 Sewer Design Criteria

Item No.	Design Element	Criteria
1	Average Annual Daily Flow for special and residential erven	Refer to Table 2.2
2	Allowance for Infiltration	15%
3	Capacity of Sewer	Pipes may run full at the Total Design Flow, which includes the peak and infiltration flows
4	Sewer pipe type	uPVC Class 34
5	Minimum velocity	0.7 m/s
6	Minimum pipe diameter	160 mm

3.2 Sewer Collection & Conveyance

The sewer collection system will be designed to accommodate the phased growth of the development, ensuring seamless integration with the on-site wastewater treatment works (WWTW) and the Rietspruit WWTW. Key elements of the system include gravity pipelines, pump stations, and bulk sewer pipelines.

3.2.1 Projected Sewer Demands Based on Land Uses

The projected sewer demands in Table 3.2 below have been derived using the water demands in accordance with the *Neighbourhood Planning and Design Guide (Red Book)* for the various land uses proposed for the Vaal Aerotropolis.

Table 3.2 Projected Sewer Demands Based on Land Uses

Detailed Land Use	Phase 1			Phase 2			Phase 3		
	Average Dry Weather Flow (kL/day)	Peak Dry Weather Flow (kL/day)	Peak Wet Weather Flow (kL/day)	Average Dry Weather Flow (kL/day)	Peak Dry Weather Flow (kL/day)	Peak Wet Weather Flow (kL/day)	Average Dry Weather Flow (kL/day)	Peak Dry Weather Flow (kL/day)	Peak Wet Weather Flow (kL/day)
Airport	395	592	651	1 370	2 055	2 260	2 466	3 699	4 253
Hospital	64	95	105	64	95	105	64	95	110
Hotel Park	55	82	90	55	82	90	55	82	94
Shopping World	244	367	403	244	367	403	244	367	422
Office Park	387	580	638	387	580	638	387	580	667
Head Office	43	65	71	43	65	71	43	65	75
Conference Centre	35	52	58	35	52	58	35	52	60
Trade Zones	288	432	475	648	972	475	3 188	4 782	5 499
Security House	2	3	3	2	3	3	2	3	3
Total	1 512	2 268	2 608	2 847	4 271	4 291	6 483	9 725	11 183

3.2.2 Capacity of the WWTW

The Average Dry Weather Flow is assumed to be 80% of the daily water demand as per table *K.4* in the *Planning and Design Guide*. The Peak Wet Weather Flow includes a peak factor applied as recommended by the Planning and Design Guide as well as 15% for infiltration.

In accordance with the *Neighbourhood Planning and Design Guide (Section K: Sanitation)*, the estimation of wastewater flows for planning purposes is typically derived as a proportion of potable water demand. The guideline indicates that the **Average Dry Weather Flow (ADWF) is generally assumed to be approximately 70% to 90% of the potable water demand**, with a commonly adopted design value of **80% for planning and preliminary design**. This relationship accounts for consumptive water uses, system losses, and return flows, and provides a practical basis for estimating sewage generation where detailed flow data is not yet available.

Hence, the sewage inflow will be based on the following table below:

Table 3.3 Sewage Inflow

Item No.	Sewage Inflow (ML/day)
ADWF	1.54
PDWF (2 x ADWF)	3.08
PWWF (1.5 x ADWF)	2.25
Capacity of WWTW	1.8

4. Development Phases

4.1 Phase 1: Initial Collection System and On-Site Treatment

During Phase 1, the bulk sewer infrastructure will focus on collecting sewerage from the airport, Airport City, and initial portions of the trade zones through a 300mm Ø bulk sewer pipeline. A gravity sewer pipeline will convey sewer through 450mm Ø bulk sewer pipes to an on-site WWTW. This phase will include:

- **Gravity Sewer Network:** Designed to optimize flow from the airport, trade zones, and adjacent areas, minimizing the need for pumping stations and reducing operational costs.
- **Pump Stations:** Strategically located pump stations, where required, to assist flow from low-lying areas.
- **On-Site Wastewater Treatment Works (WWTW):** The WWTW will be designed with an initial treatment capacity of 1.8 ML/day, incorporating processes such as primary sedimentation, biological treatment, and tertiary treatment for reuse purposes. The treatment processes are subject to the requirements for treated effluent to be reused on the Vaal Aerotropolis.

4.2 Phase 2: Expansion and Partial Diversion to the Rietspruit WWTW

As the development progresses, Phase 2 will extend the bulk sewer network to collect sewerage from additional areas, including the expanded airport precinct, trade zones and agricultural zones. This phase will also introduce a secondary bulk sewer pipeline to connect with the regional Rietspruit WWTW.

- **Bulk Sewer Pipeline Expansion:** Construction of a new 200mm Ø pipeline to convey wastewater from the development directly to the Rietspruit WWTW. This pipeline will be designed to accommodate future capacity increases projected in Phase 3.
- **Upgrades to Pump Stations:** Pump stations constructed in Phase 1 will be upgraded to handle increased flow. An additional pump station will be constructed to divert the additional capacity for phase 2 and 3 towards the Rietspruit WWTW. The bulk sewer pipeline will include one river crossing.
- **Operational Balance:** The on-site WWTW will continue to treat sewerage from parts of the development, focusing on high-efficiency reuse and reclamation processes.

4.3 Phase 3: Full Integration and Capacity Upgrades

In the final phase, the sewer system will be fully integrated to serve the entire development, including the railway hub and remaining zones. This phase will include enhancements to both the on-site WWTW and the bulk sewer pipeline infrastructure.

- **Pipeline Capacity Upgrades:** Additional sewer pipelines will be constructed, and existing pipelines upgraded to ensure sufficient capacity for the entire development.
- **Full Diversion to Rietspruit WWTW:** Sewerage flow exceeding the on-site WWTW's capacity will be diverted to the Rietspruit WWTW via the bulk sewer pipeline.

Refer to **Appendix A** for the proposed bulk sewer reticulation network layout plan.

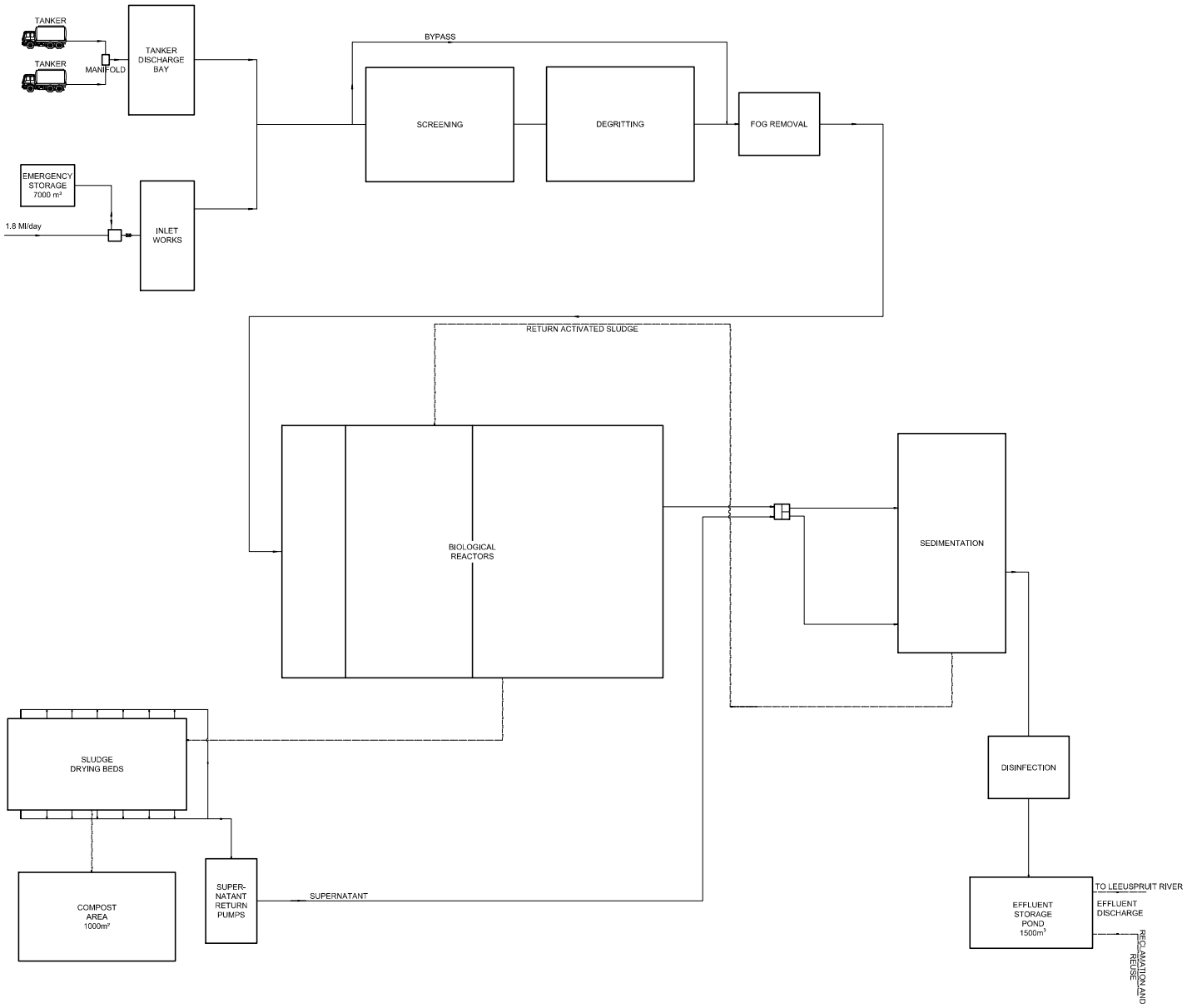
5. Process Design

5.1 Design Process Flow Diagram

The process flow diagram (PFD) for the proposed wastewater treatment works is presented below. The diagram illustrates the overall treatment philosophy, key process units, and sludge handling facilities required to treat and manage an estimated 1.8 ML/day of wastewater generated by the Vaal Aerotropolis development.

Figure 2: Process Flow Diagram

Refer to next page.



REV	DATE	BY	DESCRIPTION	CHK	APD
A	16-05-2025	JN	FOR INFORMATION	JN	DC

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CLIENT: VAAL AEROZONE

DRAWING STATUS: INFORMATION

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WSP Group Africa (Pty) Ltd
Transportation and Infrastructure
The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: WASTEWATER TREATMENT WORKS CONCEPTUAL PROCESS FLOW DIAGRAM

SCALE :	CHECKED:	APPROVED:
NTS	JN	DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/16
PROJECT No: 43103108	DRAWING No: 43103108-VAD-WSP-SW-ZZ-DR-SE-SM0001	REV: A

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TEMPLATE: LTR1EDM MAY 2017

5.2 High-Level Process Description

The treatment system comprises the following key stages:

5.2.1 Inlet Works and Preliminary Treatment

Wastewater entering the works is first directed through the inlet works, which includes a tanker discharge facility for controlled offloading of hauled waste streams. From here, the influent undergoes preliminary treatment through:

- Screening to remove gross solids and debris
- Degritting to extract inorganic material such as sand and grit
- FOG (fat, oil, and grease) removal to prevent downstream process interference

This stage protects downstream mechanical and biological processes, ensuring reliable plant operation.

An emergency storage facility (±7,000 m³) and bypass arrangement is incorporated to provide resilience during peak inflows, operational upsets, or maintenance events.

5.2.2 Primary Flow Conditioning and Biological Treatment

Following preliminary treatment, the wastewater is conveyed to the biological reactor system, which forms the core of the treatment process. The biological reactors facilitate the removal of organic matter and nutrients through microbial activity under controlled aerobic (and potentially anoxic) conditions.

The process is designed to accommodate variable influent loads typical of phased development, ensuring stable treatment performance under both average and peak conditions.

5.2.3 Secondary Clarification (Sedimentation)

Mixed liquor from the biological reactors flows to secondary sedimentation tanks, where solids-liquid separation occurs. Activated sludge settles under quiescent conditions, producing:

- Clarified effluent, which proceeds to disinfection
- Return Activated Sludge (RAS), which is recycled back to the biological reactors to maintain biomass concentration
- Waste Activated Sludge (WAS), which is directed to sludge handling facilities

This separation process is critical for achieving compliant suspended solids and associated pollutant removal.

5.2.4 Disinfection and Effluent Management

The clarified effluent is subjected to disinfection to ensure compliance with microbiological standards prior to discharge or reuse.

Post-treatment, the effluent is routed to an effluent storage pond (±1,500 m³), which serves as a balancing and holding facility prior to:

- Controlled discharge to the Leeuspruit River
- Reclamation and reuse, where applicable
- Controlled abstraction for tanker loading, if required

The inclusion of storage capacity provides operational flexibility and accommodates fluctuations in effluent demand and discharge constraints.

5.2.5 Sludge Handling and Management

Sludge generated from the biological and clarification processes is treated via sludge drying beds, where dewatering occurs through natural processes.

The dried sludge is then transferred to a designated composting area (±1,000 m²) for further stabilisation. Supernatant generated during sludge handling is returned to the head of the works via supernatant return pumps, ensuring no loss of process water and maintaining overall treatment efficiency.

5.2.6 Influent Wastewater Characteristics and Associated Losses

The process configuration presented herein has been developed on the basis that the influent wastewater to the proposed treatment works comprises of domestic sewage only, characteristic of urban, commercial, and airport-related developments associated with the Aerotropolis.

The process design accordingly assumes typical municipal wastewater characteristics, including biodegradable organic loading, suspended solids, and nutrient concentrations consistent with domestic sewage. It is recognised, however, that future development phases may introduce non-domestic or light industrial effluent, the extent and characteristics of which will be confirmed during the detailed design phase. The potential impact of such inflows on process performance and treatment requirements will be assessed further once land-use and tenant profiles are finalised.

In addition to influent assumptions, the treatment philosophy also considers anticipated process losses and effluent utilisation pathways, as outlined below.

5.2.6.1 Backwash and Internal Process Returns

The design does not currently include advanced tertiary filtration processes that would generate significant backwash streams. However, provision is made for internal process recycle streams, including:

- Return Activated Sludge (RAS) from secondary settling
- Supernatant return from sludge drying beds

These return flows are directed back to the head of the works via dedicated return systems, ensuring that process water is retained within the treatment cycle and minimising net losses. Should tertiary filtration or advanced polishing units (e.g. rapid sand filtration, membrane systems) be incorporated during detailed design, associated backwash flows will be captured and returned to the inlet works or equalisation facilities.

6. Sustainable Re-Use Applications

6.1 Re-Use Applications

The proposed wastewater treatment works has been designed not only to achieve regulatory compliance for effluent discharge, but also to support sustainable water reuse and resource recovery initiatives in alignment with the broader Aerotropolis development objectives.

The system therefore incorporates provisions for treated effluent reuse, reducing environmental impact and promoting circular resource use within the development.

6.1.1 Treated Effluent Re-Use Applications

Treated effluent from the works will be directed to the effluent storage pond (±1,500 m³), which provides buffering capacity and enables controlled distribution for reuse purposes. The reuse strategy is intended to offset potable water demand and support operational requirements within the development.

The following reuse applications are proposed:

- **Irrigation of landscaped and agricultural areas:** Treated effluent will be utilised for irrigation of landscaped zones, green belts, and agricultural areas within the Aerotropolis. This is expected to provide a consistent and reliable water source, particularly beneficial in mitigating seasonal water demand fluctuations.
- **Industrial processes within trade zones:** Provision is made for the use of treated effluent in non-potable industrial applications, including cooling systems and equipment cleaning. This supports water efficiency within commercial and light industrial activities anticipated within the development.

The extent and prioritisation of reuse will be further refined during the detailed design phase, informed by confirmed demand profiles, distribution infrastructure requirements, and applicable water quality standards.

6.1.2 Effluent Discharge Considerations

Notwithstanding the reuse strategy, the treatment system retains the ability to discharge treated effluent to the receiving environment (Leeuspruit River) under controlled conditions. This provides operational flexibility in scenarios where reuse demand is limited or storage capacity is exceeded.

The system is therefore designed as a dual-use arrangement, supporting both:

- Effluent reuse within the development, and
- Compliant discharge to the receiving watercourse

The final balance between reuse and discharge will depend on operational conditions, seasonal demand, and regulatory licensing requirements.

Refer to **Appendix B** for the proposed bulk sewer typical details.

7. Conclusion

There is no bulk sewer capacity in the nearby areas, long term plans are in place at the Rietspruit WWTW, but alternative measures are required to service the Development. The existing infrastructure within Emfuleni Municipality does not have capacity to cope with the current demand and therefore cannot contribute or support the Aerotropolis development in the near future.

The current concept design involves collecting wastewater from various sources, including the airport city, airport, railway, security houses, and trade zones, through a bulk sewer pipeline network. The feasibility of this system depends on factors such as topography, pipe sizing, flow rates, and the integration of gravity and pump-driven conveyance where necessary. A hydraulic analysis should be conducted in more detail following the finalisation of airport platform levels, to determine the optimal pipeline alignment and to assess potential bottlenecks or capacity constraints.

The collected sewage will be transferred to an on-site wastewater treatment works (WWTW) with a capacity of 1.8 ML/day. The treatment process should be designed to handle variations in influent quality while ensuring that the treated effluent meets environmental discharge standards and reuse requirements.

As the development expands, additional infrastructure will be required to accommodate increased wastewater flows. A proposed pipeline will transfer flow from future phases (Phase 2 and Phase 3) towards the Rietspruit Wastewater Treatment Works (WWTW). The feasibility of this pipeline depends on the progress of the Rietspruit WWTW which is set to be upgraded by Rand Water, the hydraulic capacity following the updated platform levels and finalised bulk earthworks balancing, integration with future surrounding areas developments sewer networks, and coordination with local authorities managing the Rietspruit WWTW. A phased approach should be adopted to ensure that future upgrades align with projected development timelines and capacity expansion needs.

A

Proposed Bulk Sewer Reticulation Network Layout Plan

Appendix A – Proposed Bulk Sewer Reticulation Network Layout Plan

LEGEND

PROPOSED SEWER PIPE	
FLOW DIRECTION	

REV	DATE	BY	DESCRIPTION	CHK	APD
A	29/08/2025	OD	BULK SEWER CONCEPT LAYOUT	KE	KE

ARCHITECT:

CLIENT: VAAL AEROZONE

DRAWING STATUS:

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WSP Group Africa (Pty) Ltd
The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2413 Cape Town 8000
Tel: +27(0)21-481-5700 Fax: +27(0)21-481-5799 www.wsp.com

VAAL AEROTROPOLIS CONCEPT LAYOUT PLAN

BULK SEWER CONCEPT LAYOUT - AEROTROPOLIS PRECINCT

SCALE:	CHECKED:	APPROVED:
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DESIGN: OD	DRAWN: OD	DATE: 2026/08/25
PROJECT No: 43103108	DRAWING No: 43103108 - 001	REV: A

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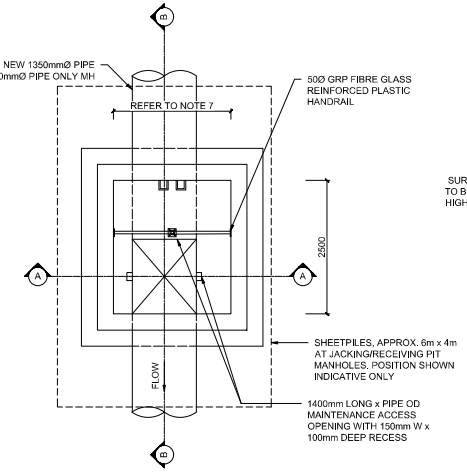
TEMPLATE: ISSUE 4 (NOV 2017)

B

Proposed Bulk Sewer Typical Details

Appendix B – Proposed Bulk Sewer Typical Details



BULK SEWER MANHOLE PLAN (ROOF SLAB REMOVED)

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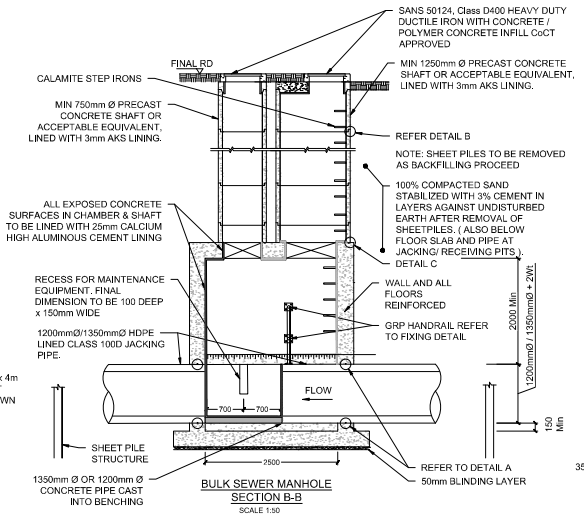

BULK SEWER MANHOLE
SECTION B-B

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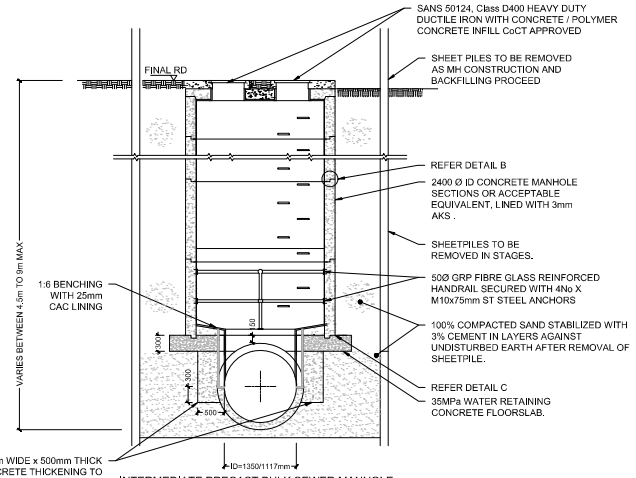

INTERMEDIATE PRECAST BULK SEWER MANHOLE
SECTION C-C

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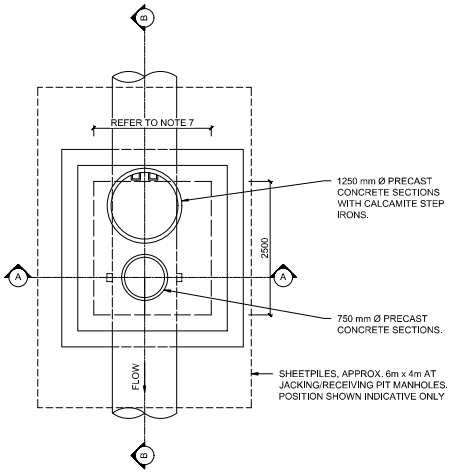

BULK SEWER MANHOLE ROOF SLAB

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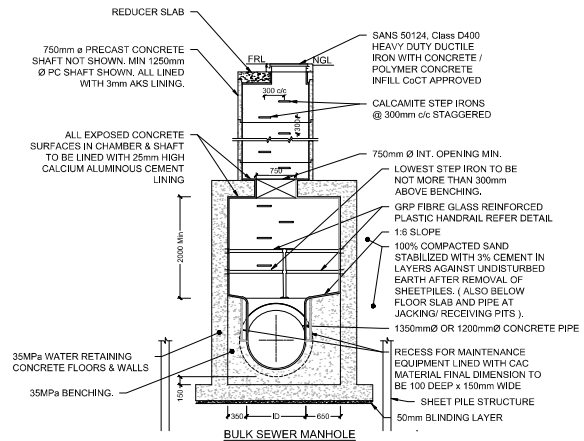
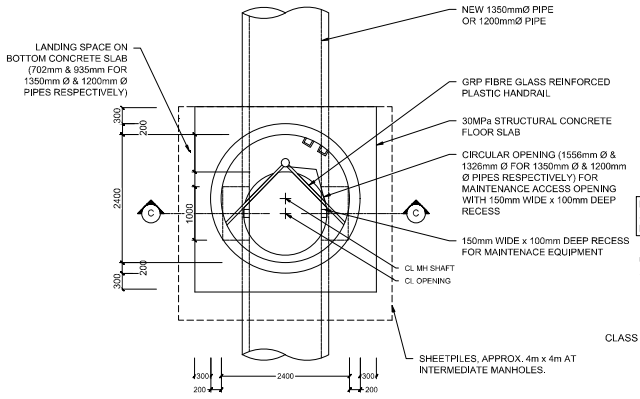


BULK SEWER MANHOLE
SECTION A-A

SCALE 1:50



INTERMEDIATE PRECAST BULK SEWER MANHOLE PLAN (ROOF SLAB REMOVED)

SCALE 1:50

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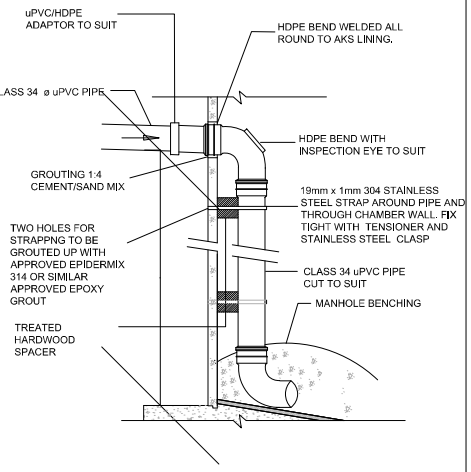
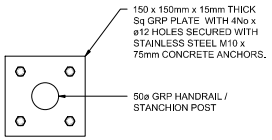


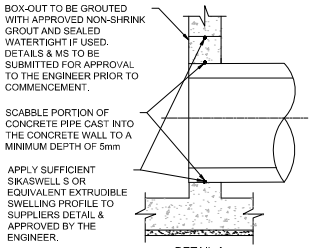
TYPICAL INTERNAL BACKDROP SEWER MANHOLE

NTS



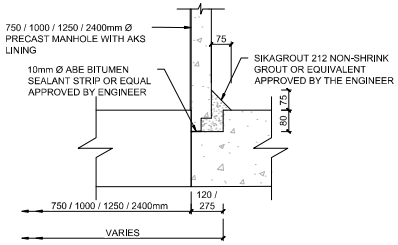
GRP HANDRAIL FIXING DETAIL

SCALE 1:5



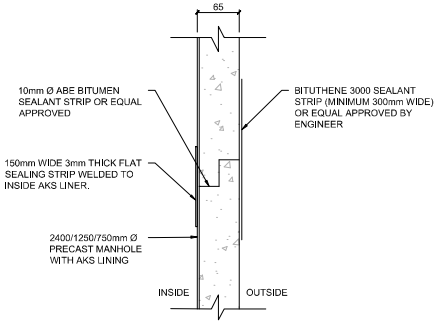
DETAIL A

SCALE 1:25



DETAIL C

SCALE 1:10



DETAIL B

SCALE 1:5

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A	16-05-2025	JN	FOR INFORMATION	JN	DC

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CLIENT: VAAL AEROZONE

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WSP Group Africa (Pty) Ltd
The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: BULK SEWER TYPICAL DETAILS SHEET 1

SCALE: AS SHOWN	CHECKED: JN	APPROVED: DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/19
PROJECT No: 43103108	DRAWING No: 43103108-WAO-WSP-SW-ZZ-DR-SE-TD0001	REV: A

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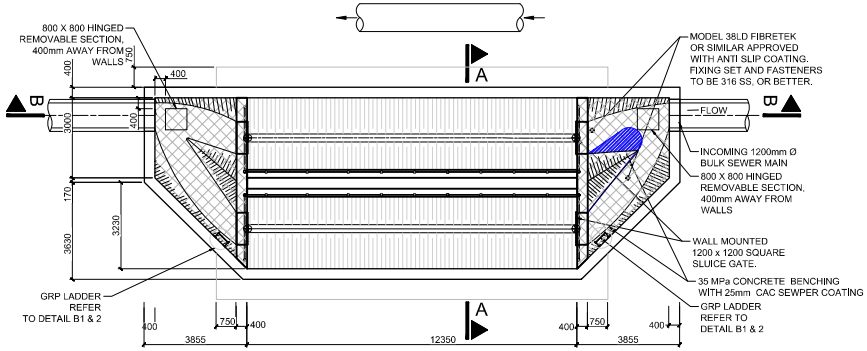

PLAN VIEW (ROOF SLAB REMOVED)
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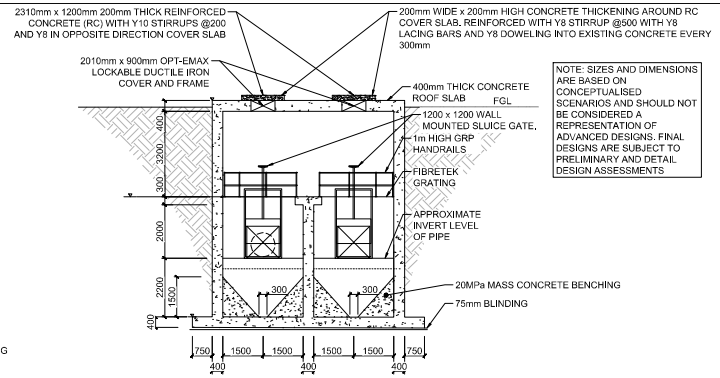

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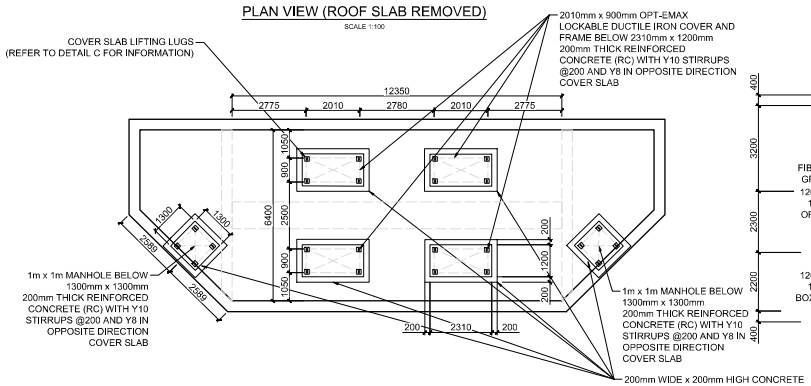
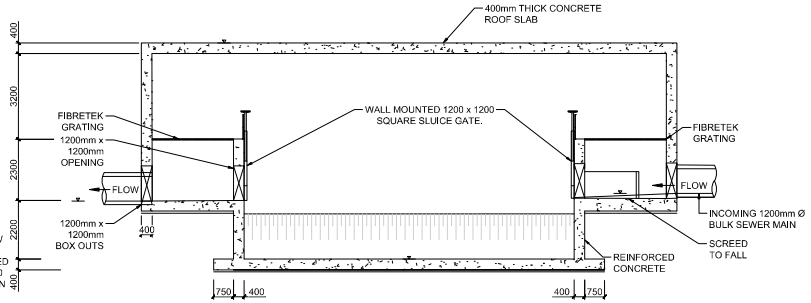
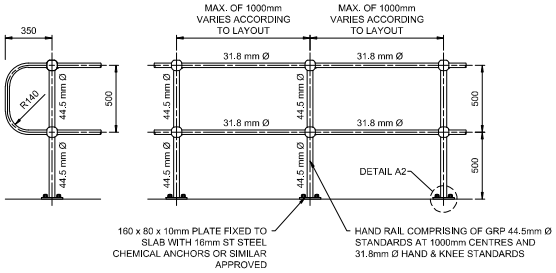
SECTION A-A
SCALE 1:100



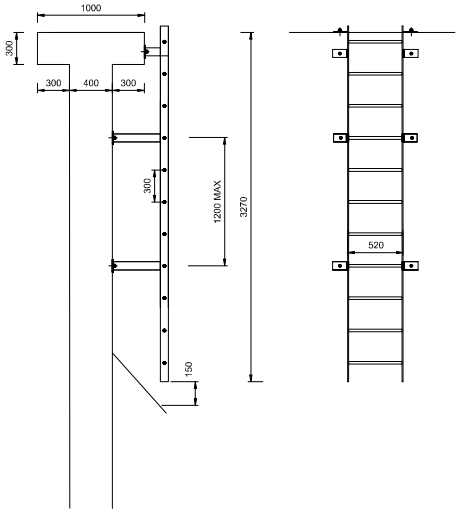
PLAN VIEW (WITH ROOF SLAB)
SCALE 1:100



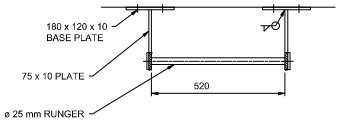
SECTION B-B
SCALE 1:100



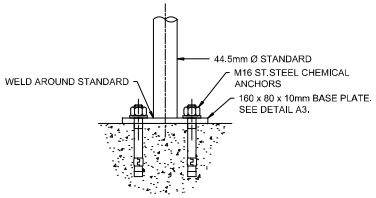
DETAIL A1: TOP MOUNTED HAND RAIL ELEVATION
SCALE 1:20



DETAIL B1:
SECTIONAL ELEVATIONS OF INTERNAL LADDER
SCALE 1:20



DETAIL B2:
PLAN VIEW OF LADDER
SCALE 1:10



DETAIL A2: BALUSTRADE FIXING
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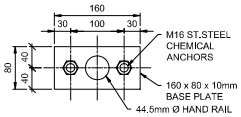

DETAIL A3: BASE PLATE DETAIL
SCALE 1:5

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A	16-05-2025	JN	FOR INFORMATION	JN	DC

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The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: BULK SEWER TYPICAL DETAILS SHEET 2

SCALE:	CHECKED:	APPROVED:
AS SHOWN	JN	DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/19
PROJECT No: 43103108	DRAWING No: 43103108-VAD-WSP-SW-ZZ-DR-SE-TD0002	REV: A

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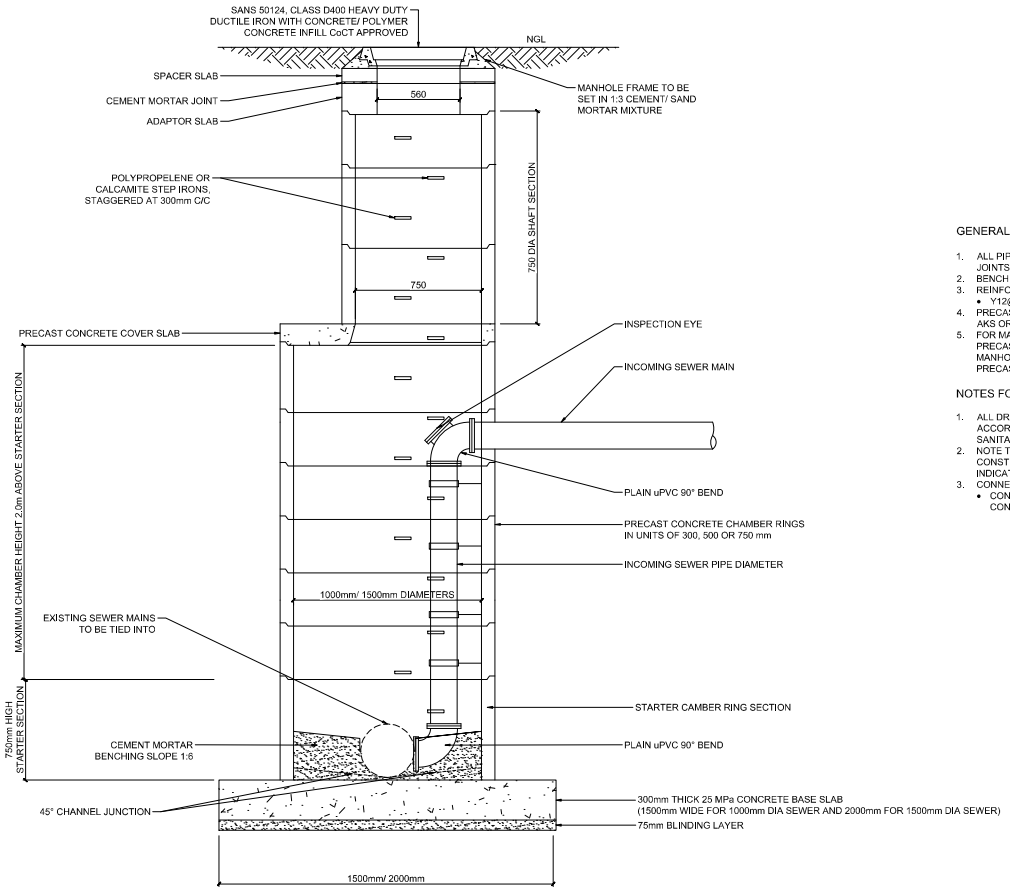


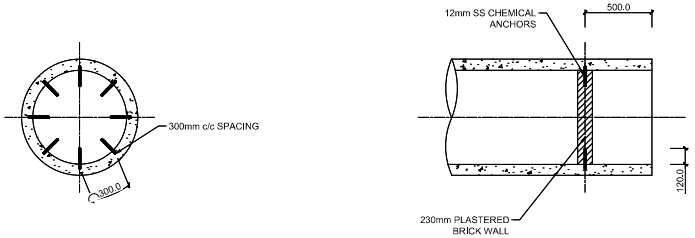
TYPICAL PRECAST COCT CONCRETE MANHOLE
(INCL. DROP IF REQUIRED)
NTS

GENERAL NOTES

1. ALL PIPE CONNECTIONS TO MANHOLE TO HAVE FLEXIBLE JOINTS.
2. BENCHING TO BE 20 MPa CONCRETE.
3. REINFORCING FOR BASE SLAB AS FOLLOWS:
   - Y12@150
4. PRECAST MANHOLE RINGS ARE NOT REQUIRED TO BE AKS OR CAC LINED.
5. FOR MANHOLES DEPTHS LESS THAN 4.0m, 1000mm DIA PRECAST MANHOLE SHAFT TO BE INSTALLED. FOR MANHOLE DEPTHS EXCEEDING 4.0m, 1500mm DIA PRECAST SHAFT TO BE INSTALLED.

NOTES FOR DROP MANHOLES

1. ALL DROP MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST CoCT WATER AND SANITATION REQUIREMENTS.
2. NOTE THAT THE DRAWING IS N.T.S AND SHOULD BE CONSTRUCTED ACCORDING TO THE DIMENSIONS INDICATED.
3. CONNECTION TO EXISTING SEWER:
   - CONTINUOUS FLOW - DROP MANHOLE TO BE CONNECTED INVERT TO INVERT



TYPICAL END CAP DETAIL
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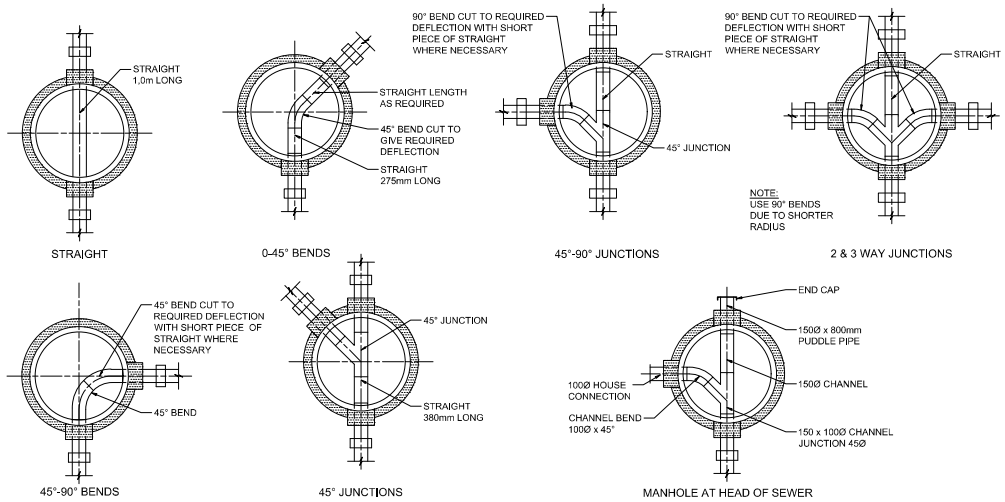

SEWER BENCHING DETAILS
SCALE 1:100

REV	DATE	BY	DESCRIPTION	CHK	APD
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The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: BULK SEWER TYPICAL DETAILS SHEET 3

SCALE:	CHECKED:	APPROVED:
AS SHOWN	JN	DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/19
PROJECT No: 43103108	DRAWING No: 43103108-\AD-WSP-SW-ZZ-DR-SE-TD0003	REV: A

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TEMPLATE VERSION MAY 2017

GENERAL STRUCTURAL NOTES:

1) ALL DIMENSIONS AND LEVELS ON THE DRAWINGS ARE SUBJECT TO CONFIRMATION BEFORE CONSTRUCTION COMMENCES AND ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE ENGINEER.
2) ALL EXCAVATIONS AND FOUNDATIONS TO BE CHECKED AND APPROVED BY THE ENGINEER OR HIS DELEGATED SPECIALIST GEOTECHNICAL ENGINEER BEFORE ANY CONCRETE IS CAST.
3) CONCRETE CHARACTERISTICS (AT 28 DAYS):
   STRUCTURAL 35MPa/19mm (ALL REINF. CONCRETE)
   BENCHING 20MPa/19mm
   WALL FOOTINGS 15MPa/19mm
   THRUST BLOCKS 15MPa/19mm
   ENCASEMENT 20MPa/19mm
   SCREEDS 20MPa/13mm
   BLINDING 15MPa/19mm
4) MINIMUM CONCRETE COVER TO REINFORCEMENT IS 50mm.
5) MINIMUM THICKNESS OF SCREEDS TO BE 25mm
6) ALL EXTERNAL DOORS TO BE INTERLOCK 'TDL' (OR APPROVED EQUIVALENT) HEAVY DUTY EPOXY COATED COMPLETE WITH BOTTOM LOUVRES AND INSECT MESH.
7) ALL WINDOWS MUST BE COMPLETE WITH BURGLAR BARS.
8) DOMESTIC DRAINAGE PIPING TO BE S&V PVC PIPING. FALL 1:60.
9) DOMESTIC DRAINAGE TO BE IN ACCORDANCE WITH SANS 10400-P AND SABS 1675.
10) DOMESTIC WATER SUPPLY TO BE IN ACCORDANCE WITH SANS 10252-1.
11) ALUMINIUM (OR SIMILAR APPROVED) EPOXY POWDER COATED VENTILATION LOUVRE MINIMUM 600mm X 1000mm COMPLETE WITH PLASTIC INSECT MESH AND STAINLESS STEEL FASTENERS.

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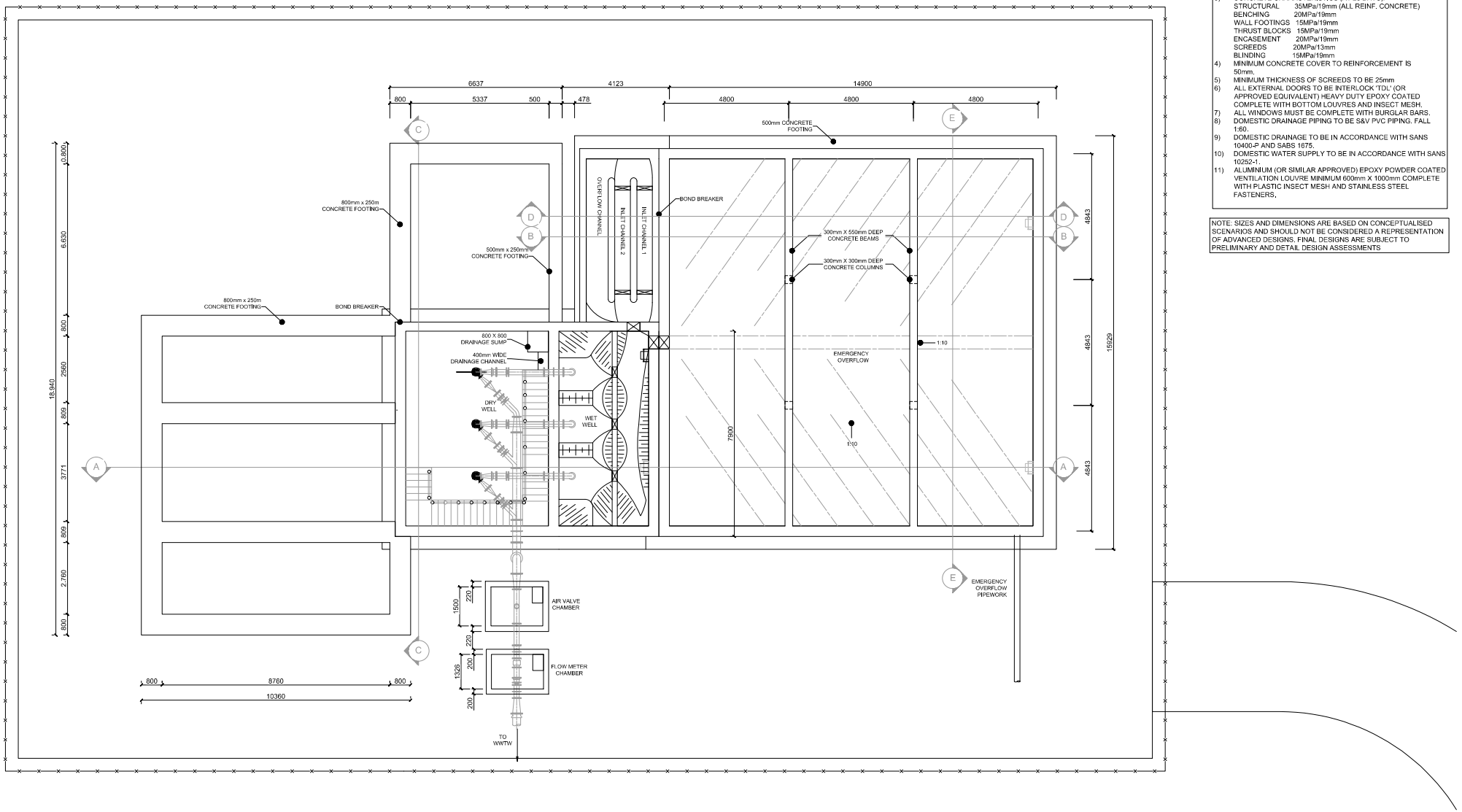

TYPICAL WWTW LAYOUT PLAN

REV	DATE	BY	DESCRIPTION	CHK	APD
A	16-05-2025	JN	FOR INFORMATION	JN	DC

ARCHITECT: -

CLIENT: VAAL AEROZONE

DRAWING STATUS: INFORMATION

A signed version of construction drawings are available in electronic format at the WSP office of origin as well as at the WSP office of issue

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PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: BULK SEWER TYPICAL DETAILS SHEET 4

SCALE:	CHECKED:	APPROVED:
AS SHOWN	JN	DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/19
PROJECT No: 43103108	DRAWING No: 43103108-IAD-WSP-SW-ZZ-DR-SE-TD0004	REV: A

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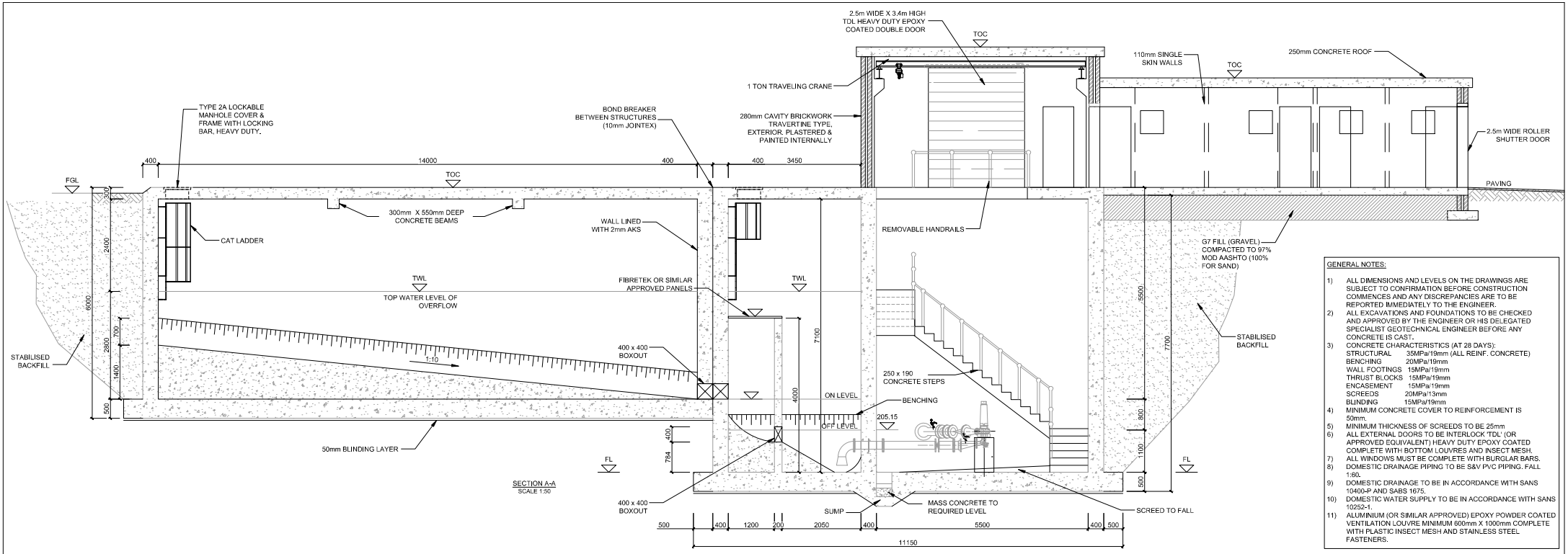

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3) CONCRETE CHARACTERISTICS (AT 28 DAYS):

STRUCTURAL	35MPa/19mm (ALL REINF. CONCRETE)
BENCHING	20MPa/19mm
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THRUST BLOCKS	15MPa/19mm
ENCASEMENT	15MPa/19mm
SCREEDS	20MPa/13mm
BLINDING	15MPa/19mm

4) MINIMUM CONCRETE COVER TO REINFORCEMENT IS 50mm.
5) MINIMUM THICKNESS OF SCREEDS TO BE 25mm
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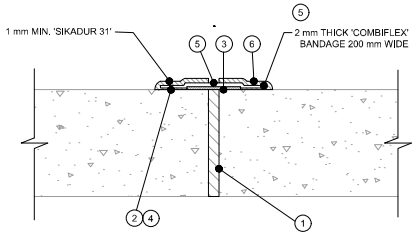
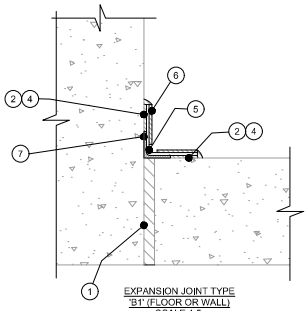
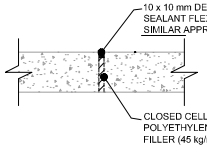


EXPANSION JOINT TYPE 'A1' (FLOOR OR WALL)
SCALE 1:5



EXPANSION JOINT TYPE 'B1' (FLOOR OR WALL)
SCALE 1:5



EXPANSION JOINT TYPE 'C'
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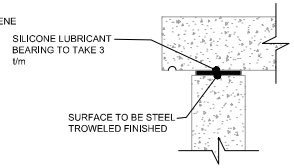
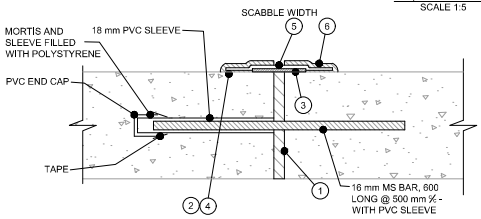
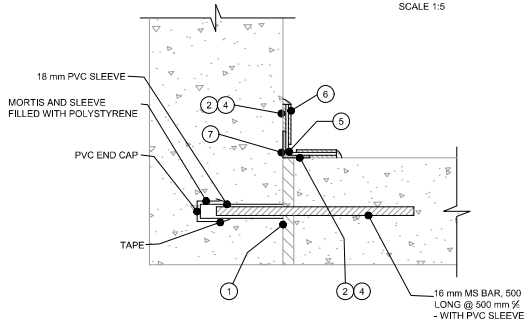


EXPANSION JOINT TYPE 'E'
SCALE 1:5



EXPANSION JOINT TYPE 'A2' (FLOOR OR WALL)
SCALE 1:5



EXPANSION JOINT TYPE 'B2' (FLOOR OR WALL)
SCALE 1:5

BANDAGE JOINT SPECIFICATION

1. FORM JOINT WITH 20 mm 'JOINTEX' CLOSED CELL POLY-ETHYLENE① OR SIMILAR APPROVED JOINT FILLER, MIN. ³ DENSITY 100 kg/m
2. CONCRETE SURFACE PREPARATION 2.1 THE SURFACE LAITANCE② IS TO BE REMOVED DOWN TO THE AGGREGATE, 10 mm WIDER EACH SIDE THAN THE BANDAGE, USING PNEUMATIC SCABBLING TOOLS.

2.2 REMOVE ALL CHIPPINGS AND DUST BY STEEL WIRE BRUSH AND VACUUM CLEANER.

3. JOINT INSTALLATION

3.1 PLACE 75 x 3 mm PVC BACKING STRIP③ CENTRALLY OVER JOINT TYPES 'A', OR NAIL IN POSITION 50 x 50 x 2 mm ALUMINIUM ANGLE 7 OVER JOINT TYPES 'B'.

3.2 APPLY 'SIKADUR 31' ADHESIVE ④, 2 mm THICK AND MIN. 50 mm WIDE, TO THE PREPARED SUBSTRATE ON EITHER SIDE OF THE PVC / ALUMINIUM STRIP IN ACCORDANCE TO THE MANUFACTURER'S SPECIFICATION.

3.3 PLACE PREVIOUSLY ACTIVATED 'COMBIFLEX HYPALON' BANDAGE⑤ 150 OR 200 mm WIDE, OVER THE JOINT WITH THE RED MASKING STRIP FACING UP. ROLL INTO 'SIKADUR 31' UNTIL THE ADHESIVE PROTRUDES THROUGH THE PERIMETER HOLES. APPLY A SECOND (1 mm THICK) COAT ⑥ OF 'SIKADUR 31' ON TOP OF THE SHEETING AND 10 mm EITHER SIDE OF THE JOINT.

3.4 REMOVE THE RED MASKING STRIP FROM THE CENTRE OF THE JOINT BEFORE THE 'SIKADUR 31' HAS SET.

4. REFERENCE TO ANY BRAND NAMES SHALL BE INTERPRETED AS THE STANDARD OF MATERIAL ACCEPTED BY THE ENGINEER, OTHER MATERIALS WILL BE CONSIDERED SUBJECT TO APPROVAL.

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TYPICAL WWTW STRUCTURES

REV	DATE	BY	DESCRIPTION	CHK	APD
A	16-05-2025	JN	FOR INFORMATION	JN	DC

ARCHITECT: -

CLIENT: VAAL AEROZONE

DRAWING STATUS: INFORMATION

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PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE

TITLE: BULK SEWER TYPICAL DETAILS SHEET 5

SCALE:	CHECKED:	APPROVED:
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DESIGN: JN	DRAWN: JN	DATE: 2025/05/19
PROJECT No: 43103108	DRAWING No: 43103108-VAD-WSP-SW-ZZ-DR-SE-TD0006	REV: A

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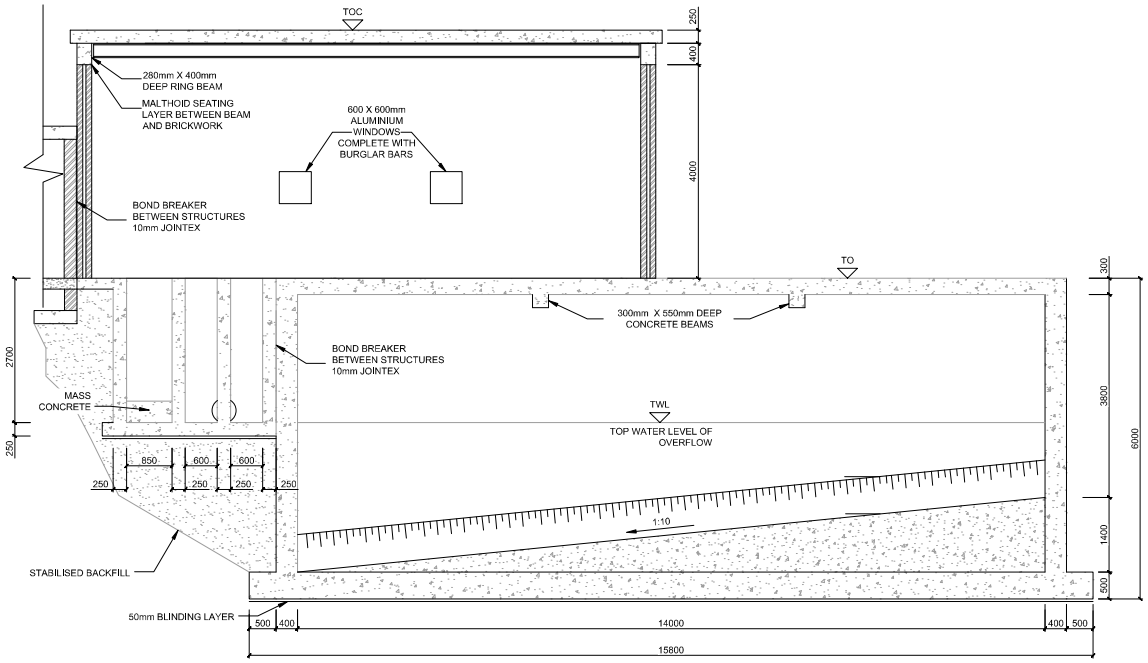
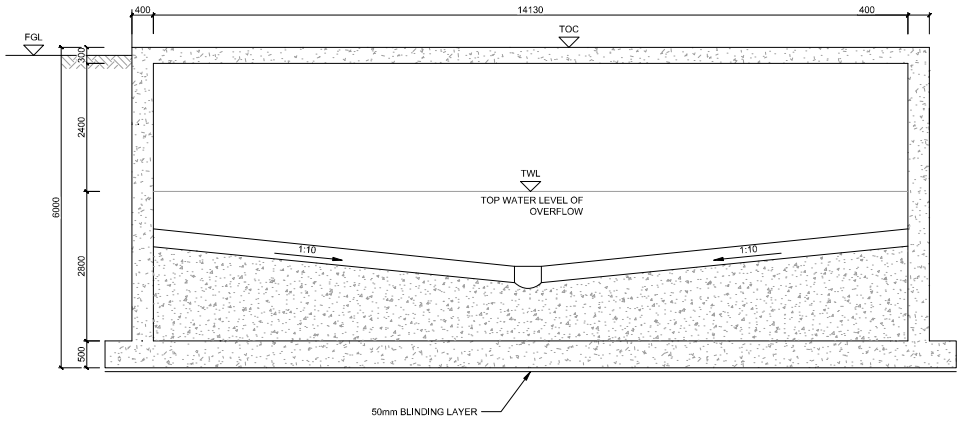
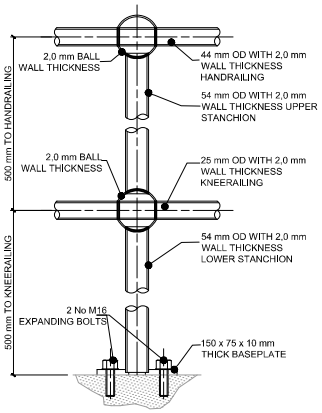


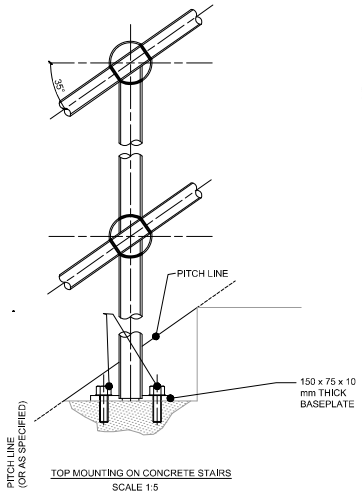
SECTION D-D
SCALE 1:50



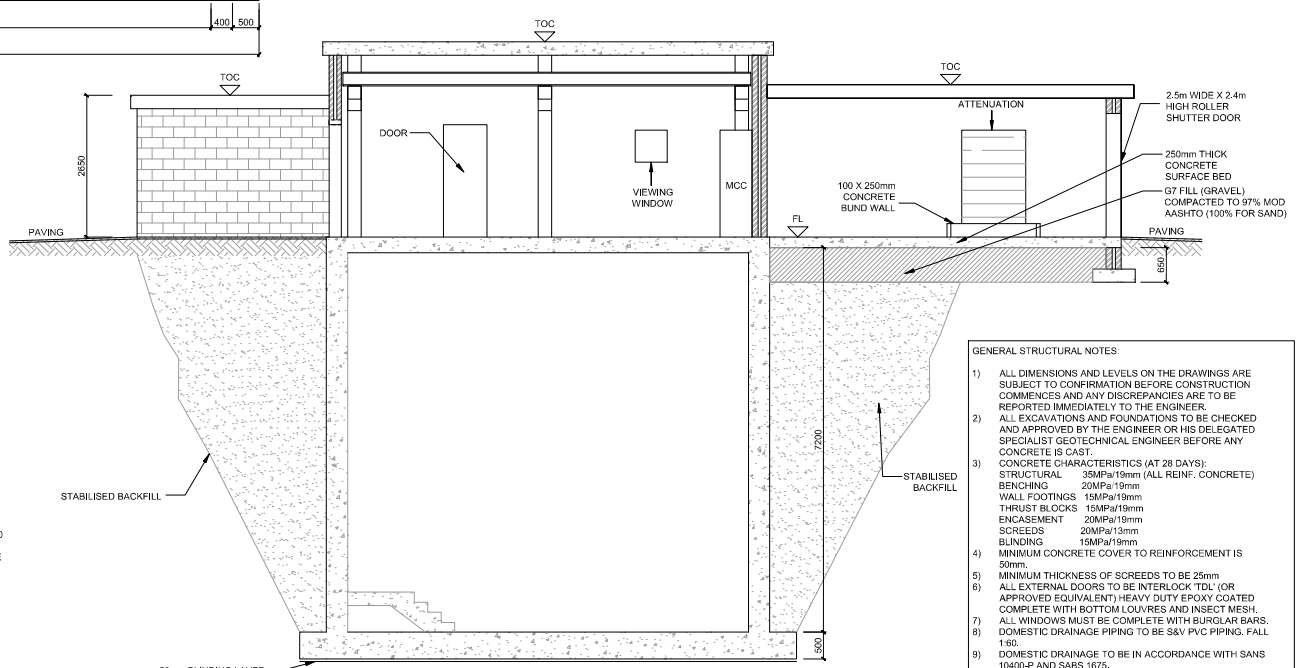
SECTION E-E
SCALE 1:50



TOP MOUNTING ON PLATFORM
SCALE 1:5



TOP MOUNTING ON CONCRETE STAIRS
SCALE 1:5



SECTION C-C
SCALE 1:50

GENERAL STRUCTURAL NOTES:

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   ENCASEMENT 20MPa/19mm
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TYPICAL WWTW STRUCTURES

REV	DATE	BY	DESCRIPTION	CHK	APD
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ARCHITECT: -
CLIENT: VAAL AEROZONE
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PROJECT: VAAL AEROTROPOLIS LAND PREPARATION PHASE
TITLE: BULK SEWER TYPICAL DETAILS SHEET 6

SCALE:	CHECKED:	APPROVED:
AS SHOWN	JN	DC
DESIGN: JN	DRAWN: JN	DATE: 2025/05/19
PROJECT No: 43103108	DRAWING No: 43103108-\AD-WSP-SW-ZZ-DR-SE-TD0006	REV: A

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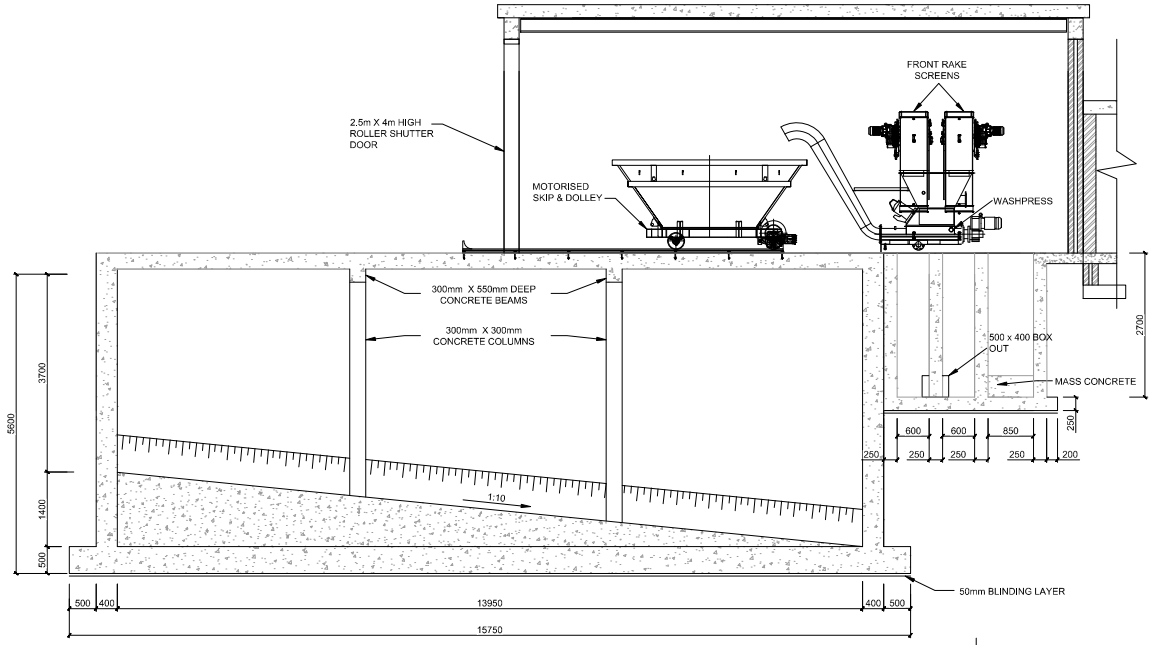


SECTION B-B

GENERAL NOTES ON PIPEWORK:

1. ALL MILD STEEL PIPES ≤ 150mmØ SHALL BE IN COMPLIANCE WITH SANS 62 MEDIUM CLASS.
2. ALL MILD STEEL PIPES > 150mmØ TO BE GRADE B AND IN COMPLIANCE WITH SANS 719.
3. ALL STAINLESS STEEL PIPES TO BE GRADE 316L.
4. MINIMUM WALL THICKNESS OF STEEL PIPES (UNLESS OTHERWISE SCHEDULED)

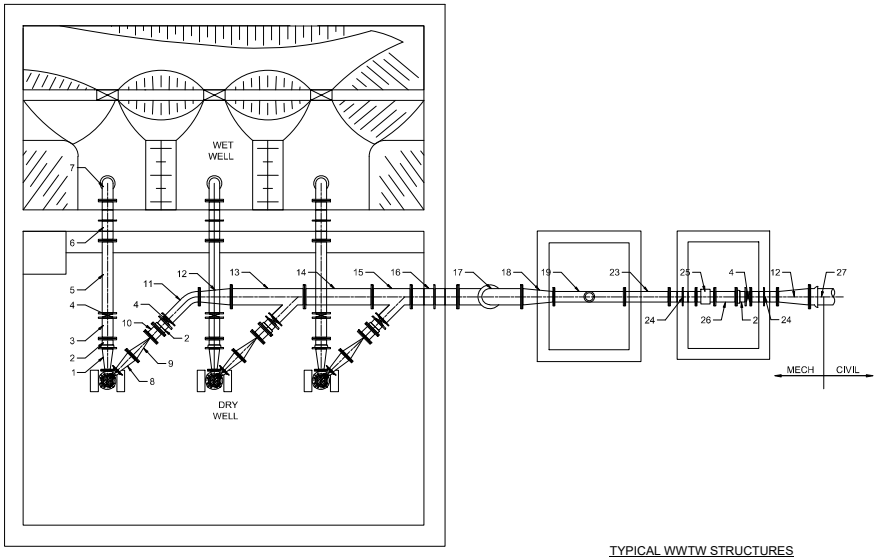
ND(mm)	MIN THICKNESS(mm)
151 TO 460	4.5

5. THE COMPULSORY PIPES, VALVES, FITTINGS AND ACCESSORIES (IE PIPEWORK) ARE INDICATED ON THE DRAWINGS, SHOWING THE REQUIRED TYPE, CONFIGURATION AND DETAILS OF THE PIPEWORK.
6. THE EXACT PIPEWORK SHALL BE DESIGNED BY THE CONTRACTOR TO SUIT THE CHARACTERISTICS OF THE EXISTING PIPEWORK AS WELL AS TO CONNECT TO THE PUMPS AND VALVES SUPPLIED BY HIM. THE DESIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE ORDERING OF PIPEWORK.
7. ALL PIPEWORK SHALL BE PROTECTED AGAINST CORROSION IN ACCORDANCE WITH THE SPECIFICATIONS.
8. THE INTERFACE BETWEEN THE MECHANICAL AND CIVIL PIPEWORK IS SHOWN ON THE DRAWINGS.
9. EXACT DIMENSIONS AND DIAMETERS OF EXISTING PIPES TO BE DETERMINED ON SITE BEFORE ORDERING OF AFFECTED PIPES AND FITTINGS.
10. ALL FLANGES, COUPLINGS AND BOLTS BELOW GROUND SHALL BE WRAPPED IN BITUMEN BASED MASTIC AND TAPE (OR APPROVED EQUIVALENT) ACCORDING TO THE SUPPLIERS SPECIFICATIONS.
11. SUITABLE ISOLATION SHALL BE PROVIDED BETWEEN FLANGES, WASHERS AND BOLTS TO PREVENT GALVANIC CORROSION BETWEEN DISSIMILAR METALS (EG BETWEEN STAINLESS STEEL AND MILD STEEL).
12. SUPPORTS AND/OR BRACKETS FOR PIPEWORK (WITH SPECIFIED CORROSION PROTECTION) SHALL BE DESIGNED AND CONSTRUCTED BY THE CONTRACTOR IN ACCORDANCE WITH THE SPECIFICATIONS.
13. UNLESS OTHERWISE SPECIFIED, FLANGES TO BE IN ACCORDANCE WITH SANS 1123 TABLE 1000/3.
14. ABBREVIATIONS :

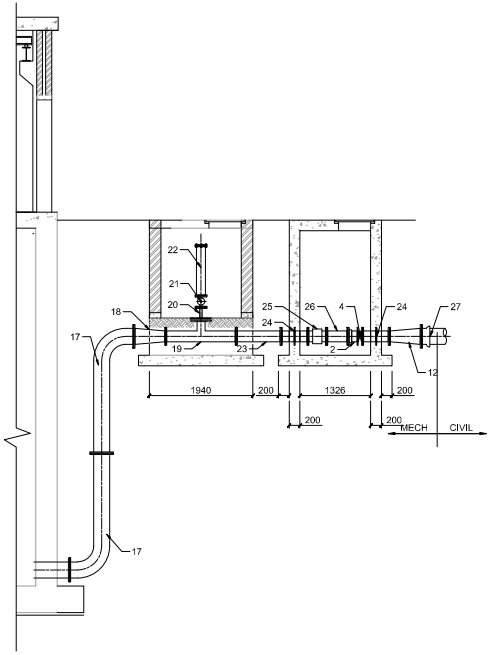
GMS	GALVANIZED MILD STEEL
RSV	RESILIENT SEAL GATE VALVE
SS	316L STAINLESS STEEL
DI	DUCTILE IRON
FOE	FLANGED ONE END
FBE	FLANGED BOTH ENDS
FAE	FLANGED ALL ENDS
FTE	FLANGED TWO ENDS
PG	PRESSURE GAUGE

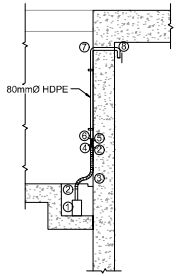
PIPEWORK PARTS LIST

NO	DESCRIPTION	QTY
1	100mmø X 200mmø SS ECCENTRIC REDUCER, FBE	3
2	200mmø FLANGED DISMANTLING COUPLING	7
3	200mmø X 375mm LONG SS SPOOL PIECE WITH 25mmø TEE FOR AIR VALVE, PRESSURE GAUGES, ETC, FAE	3
4	200mmø FLANGED GATE VALVE	7
5	200mmø X 1360mm LONG SS SPOOL PIECE, FBE	3
6	200mmø X 750mm LONG SS PUDDLE PIPE, FBE	3
7	200mmø X 90° SS BEND WITH 300mmø BELLMOUTH	3
8	100mmø X 200mmø SS CONCENTRIC REDUCER, FBE	3
9	200mmø FLANGED NON-RETURN VALVE	3
10	200mmø X 200mm LONG SS SPOOL PIECE, FBE	3
11	200mmø X 45° SS BEND, FBE	1
12	200mmø X 300mmø CONCENTRIC REDUCER, FBE	2
13	200mmø X 300mmø SS LATERAL, FAE	1
14	300mmø X 1390mm LONG SS SPOOL PIECE, FBE	1
15	200mmø X 300mmø SS LATERAL, FAE	1
16	300mmø X 865mm LONG SS PUDDLE PIPE, FBE	1
17	300mmø X 90° SS BEND WITH STRAIGHT PIECE, FBE	2
18	300mmø X 200mmø SS CONCENTRIC REDUCER, FBE	1
19	200mmø X 150mmø REDUCING TEE, FAE	1
20	50mmø X 200mm LONG SS SPOOL PIECE, ONE FLANGE TO SUIT 150mmø AND OTHER TO SUIT 50mmø	1
21	50mmø RESILIENT SEAL GATE VALVE	1
22	50mmø VENT-O-MAT RGX OR SIMILAR APPROVED	1
23	200mmø X 1000mm LONG SS SPOOL PIECE	1
24	200mmø X 500mm LONG PUDDLE PIPE, FBE	2
25	200mmø MAGNETIC FLOW METER (ENDRESS AND HAUSER OR SIMILAR APPROVED)	1
26	200mmø X 400mm LONG SS SPOOL PIECE, FBE	1
27	300mmø LONG COLLAR FLANGED ADAPTOR TO SUIT 315mmø uPVC PIPE	1



TYPICAL WWTW STRUCTURES





DRAINAGE PUMP DETAIL

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FITTINGS FOR THE SUBMERSIBLE PUMP :

1. SUBMERSIBLE DRAINAGE PUMP.
2. 32mmØ x 100mm BARREL WITH MALE THREAD (BSP) BOTH ENDS, SCREW INTO PUMP AND CONNECT TO DETACHABLE HOSE.
3. DETACHABLE 32mmØ FLEXIBLE HIGH PRESSURE HOSE (MIN. 1000mm LONG) WITH FEMALE THREADED FITTINGS.
4. 32mm Ø CAST BRASS SWING TYPE CHECK VALVE WITH TAPER THREAD FEMALE ENDS. (COBRA 1022-32 OR SIMILAR APPROVED)
5. 32mm Ø CAST BRASS FULLWAY GATE VALVE BSP TAPER THREAD FEMALE ENDS (COBRA 1002/125-32 OR SIMILAR APPROVED).
6. 1¼" x 50mm Ø MALE ADAPTOR WITH COMPRESSION FITTING ON THE 50mm Ø END. (PLASSON OR SIMILAR APPROVED).
7. 50mm Ø SABS 533: PART II - 1982 HDPE TYPE IV CLASS 10 PIPE ELECTROFUSION WELDED OR COMPRESSION FITTING COUPLED (PLASSON OR SIMILAR APPROVED) AND FIXED TO THE PUMP STATION WALL.
8. 50mm Ø x 90° ELECTROFUSION WELDED OR COMPRESSION BEND (PLASSON OR SIMILAR APPROVED)

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CLIENT: VAAL AEROZONE

DRAWING STATUS: INFORMATION

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WSP Group Africa (Pty) Ltd
The Pavilion, 1st Floor, Corner Portswood and Beach Road, Waterfront
Cape Town 8001, South Africa
PO Box 2613 Cape Town 8000
Tel: +27(0)21-481-8700 Fax: +27(0)21-481-8799 www.wsp.com

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ANNEXURE M

Vaal Aerotropolis Design (Pty) Ltd
Vaal Aerotropolis

Transportation Impact Assessment

2026-09-01

43103108 TIA Ver 1

Document distribution

Vaal Aerotropolis Design (Pty) Ltd

Vaal Aerotropolis Transportation Impact Assessment

2026-09-01

43103108 TIA Ver 1

Submitted to

Emfuleni Local Municipality

Prepared by

WSP Group Africa (Pty) Ltd
Building 1, Maxwell Office Park, Magwa Crescent West,
Waterfall City, Midrand, 1685
T +27 11 300-6183

Quality control	Name	Date	Signature
Prepared by:	Christo Bredenhann *Pr Eng*	1 September 2026	
Reviewed by:	Sameshan Naidoo *Pr Eng*	1 September 2026	
Approved by:	John Rammutla *Pr Eng*	1 September 2026	

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Abbreviations and glossary

Abbreviations

Abbreviation	Description
ACSA	Airports Company South Africa
COTO	Committee of Transport Officials
ELM	Emfuleni Local Municipality
GDRT	Gauteng Department of Roads and Transport
GLA	Gross Leasable Area
LOS	Level of Service
mppa	Million Passengers Per Annum
NMT	Non-Motorised Transport
SANRAL	South African National Roads Agency Limited
SDI	Split Diamond Interchange
SDM	Sedibeng District Municipality
TIA	Transportation Impact Assessment
V/C	Volume-to-Capacity ratio
veh/hr	Vehicles per hour

Glossary of terms

Term	Explanation
Aerotropolis	An urban development concept centred around an airport, integrating aviation, logistics, business, and residential areas.
Capacity Analysis	Evaluation of an intersection or road segment's ability to handle estimated traffic volumes.
Fatal Flaw Report	A study identifying critical issues that may prevent a project's implementation.
Interchange	A grade-separated junction connecting major roads or highways, allowing traffic movement without direct crossing.
Latent Development	Future land developments in the study area that is expected to generate additional traffic demand. Statutory approval is normally in-place.

Term	Explanation
Level of Service (LOS)	A qualitative measure describing operational conditions of traffic flow, ranging from A (best) to F (worst).
Partial Cloverleaf	A type of highway interchange design using loop ramps for efficient turning movements.
Split Diamond Interchange	An interchange design with two closely spaced diamond interchanges connected by a frontage road system.

1. Introduction

1.1 Background

WSP has been appointed by Vaal Aerotropolis Design (Pty) Ltd to undertake a Transportation Impact Assessment for the planned development of the Vaal Aerotropolis Phase 1. The Vaal Aerotropolis is a catalytic project encompassing a new international airport with passenger terminals, a secure cargo terminal, a strategically located trade zone, surrounding agri-zones and an Airport City business park which will include amenities like a hotel, offices, hospital and a shopping centre. The proposed infrastructure will offer top-tier facilities featuring environmentally sustainable practices and various incentives to attract international airlines and freight carriers.

The Vaal Aerotropolis will be located in the Sedibeng District Municipality, west of National Road N1 and directly adjacent to Provincial Route P24, approximately 45 minutes from Johannesburg. The macro locality is shown in Figure 1.1 , and the areas of development of the full development is shown in Figure 1.2.

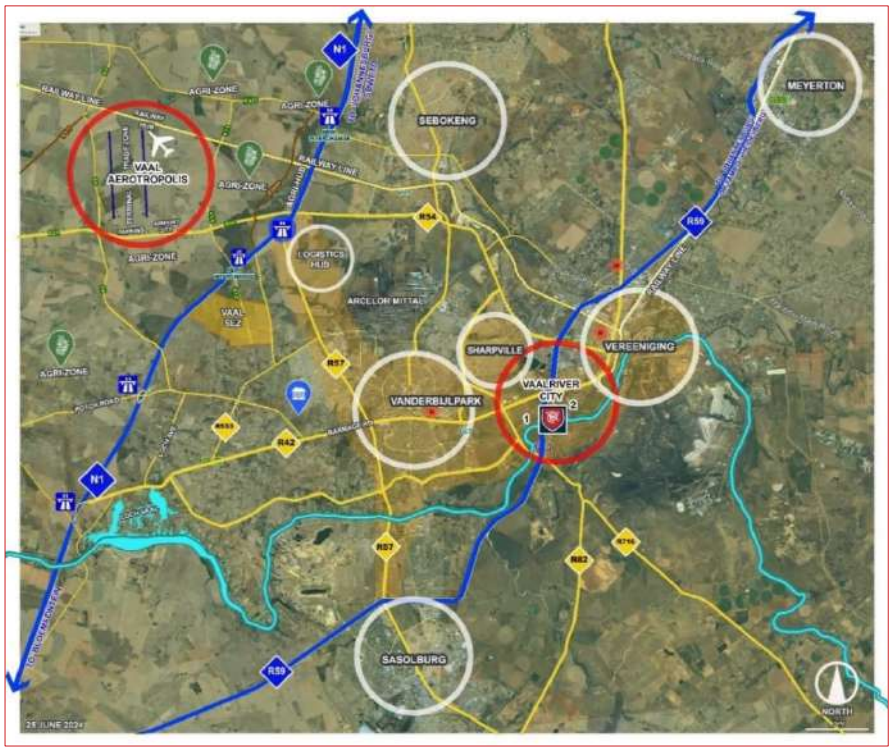


Figure 1.1 Macro locality map

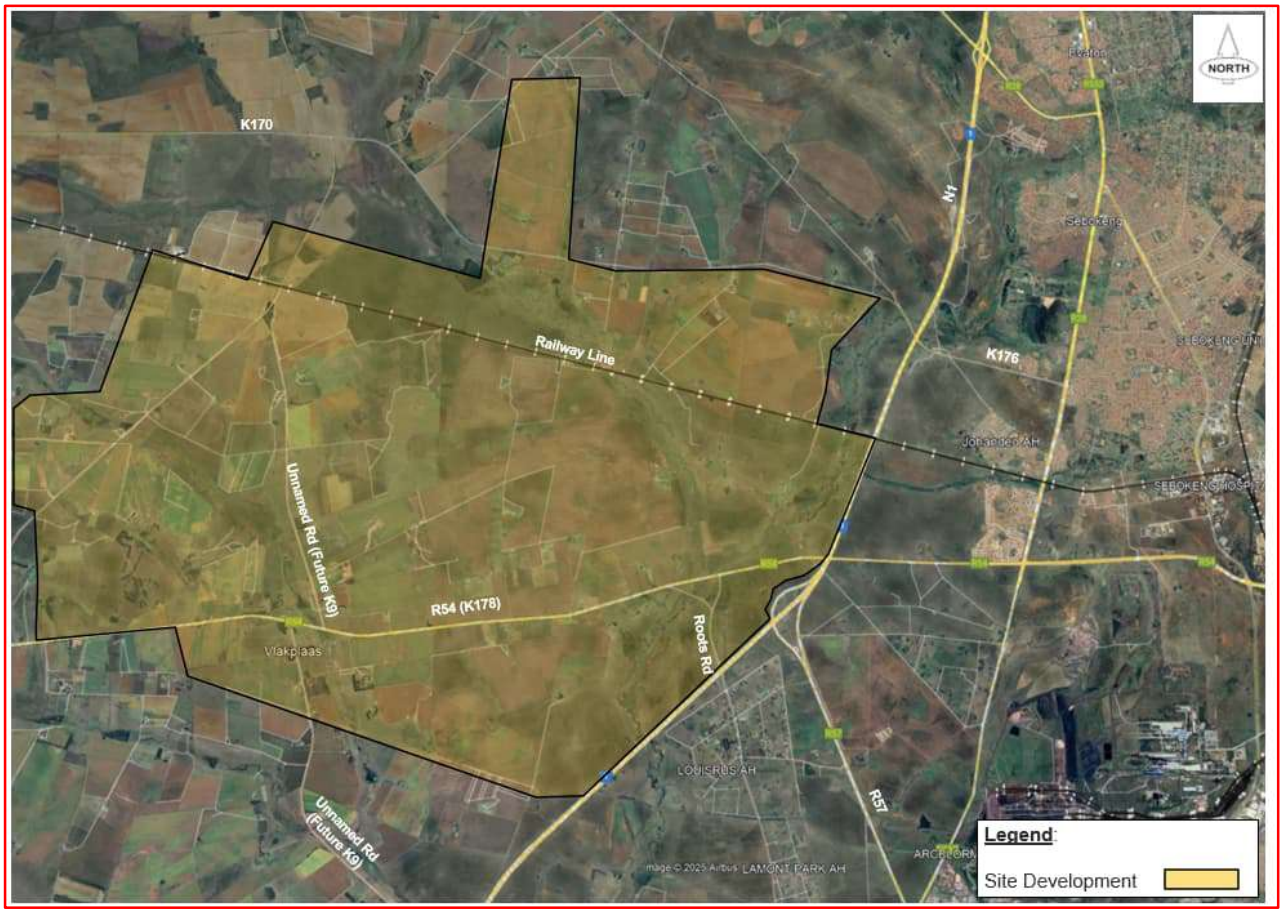


Figure 1.2 Vaal Aerotropolis development extent

1.2 Purpose of the TIA

The purpose of this study is to consider the traffic impact of the planned Vaal Aerotropolis Phase 1 on the existing surrounding road network and propose mitigation of the anticipated development traffic. This report also comments on the position of the proposed accesses, as well as the non-motorised and public transport facilities.

The TIA also details the N1 Interchange Fatal Flaw Report. The purpose of the Fatal Flaw Report is to gain in-principle approval from SANRAL for the proposed access interchange on the N1 to serve the Aerotropolis Phase 1.

1.3 Planned land-use of the development

The Vaal Aerotropolis Phase 1 is proposed to consist of several components, each of which has different land-uses and trip generation associated with it. The components include the following:

- Passenger and Cargo Terminal: This zone includes vehicular facilities associated with the passenger terminal such as drop-off and loading areas, car rental, car parking for passengers and public transport facilities for passengers.
- Cargo & Freight Terminal: This zone consists of the facilities for handling airfreight.
- Trade Zone: This zone consists primarily of light industrial and warehousing activities and is located next to the freight terminal for ease of freight transport.
- Airport City Zone: This zone consists of a hotel, offices, shopping centre and hospital.
- Agri zones and holding areas: This zone and area will be used as a live animal holding farm as well as hydroponics and any other agricultural concern for export by air.

The site layout and utilisation of the various zones is shown on the current masterplan in **Appendix A,** and an extract is shown in Figure 1.3. The masterplan shows the proposed N1/P24/D2459 split diamond interchange option and associated Provincial roads (new and upgraded) that will be required to serve the Aerotropolis Phase 1.

The development of the Vaal Aerotropolis will be undertaken in three phases with the following components in each phase. The phases are:

- Phase 1: Terminal 1, 7.2 million passengers per annum (mppa), the eastern runway, Cargo terminal, Trade Zones, solar farms, agri-zones (export focussed and live animal holding for export) and a commercial area (Airport City).
- Phase 2: Expansion of Terminal 1 up to 25 mppa capacity, additional Cargo terminals, additional Trade Zones, and agri-zones.
- Phase 3: Terminal 2 for a total capacity of 45 mppa, the 2nd western runway, additional Cargo terminals, Trade Zones and agri-zones (Phase 3).

The rate of development and land-use mix per phase will be guided by the growth of the economy and the market demand, it is envisaged that it could take up to 60 years to fully develop the Vaal Aerotropolis as outlined in the Masterplan.

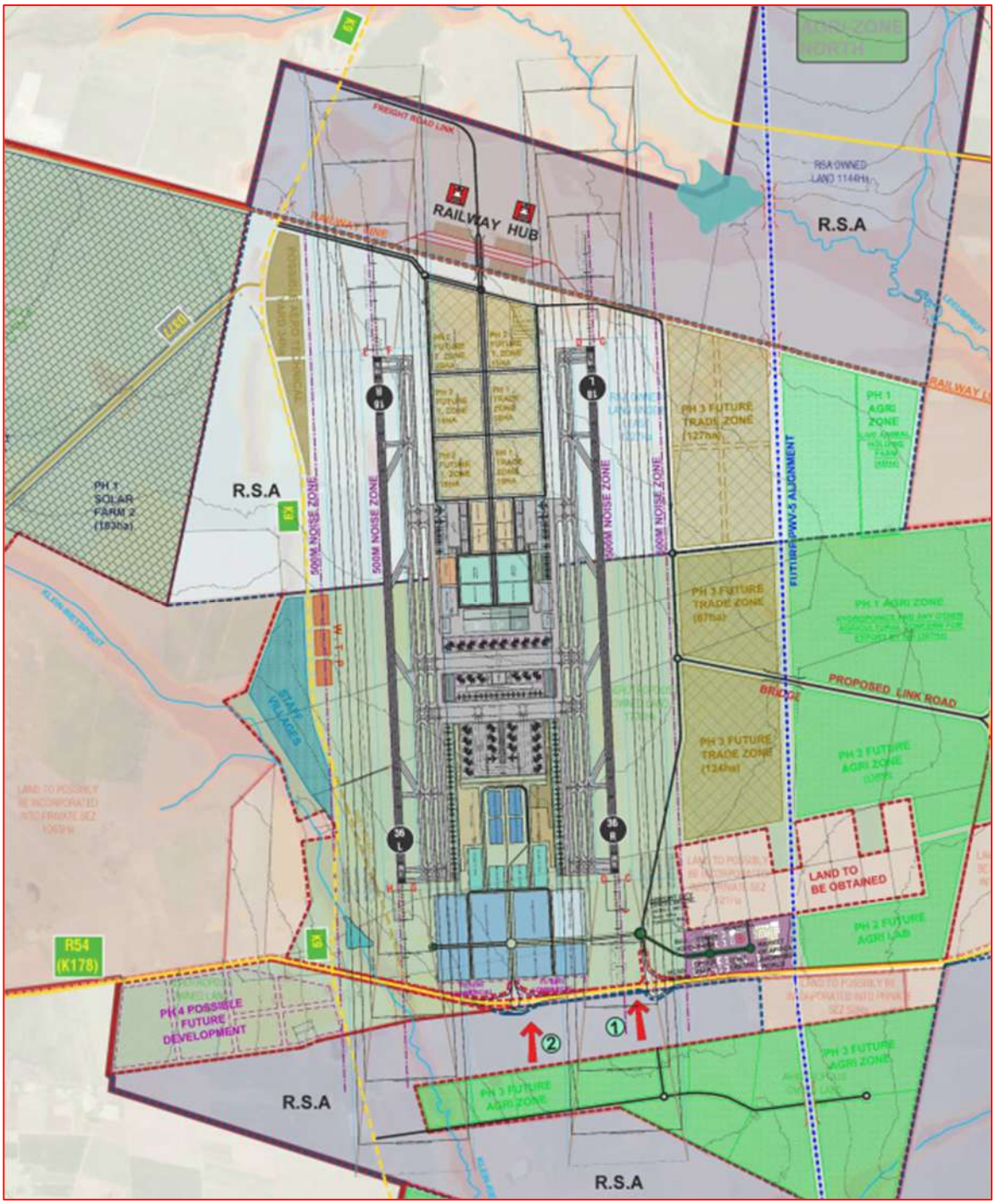


Figure 1.3 Aerotropolis masterplan extract (Airport and Trade Zones)

1.4 Statutory context

1.4.1 Emfuleni Draft Spatial Development Framework Vision 2035

The Emfuleni Local Municipality Draft Spatial Development Framework Vision 2035 refers. In terms of the Rural Development Framework, the following is stated:

"Large parts of the Emfuleni LM are rural, and activities in this area relate to agriculture. Therefore, leveraging these activities to promote economic development in the area is essential. This should be done by improving access to basic services and infrastructure while protecting high-potential agricultural land. In addition, the nature of rural development in the area also creates the opportunity for new agriculture-related industries.

Rural development framework strategic approach:

Objective: To promote sustainable and equitable rural development in the municipality by enhancing economic opportunities and improving all residents' access to basic services and infrastructure, focusing on empowering rural communities and promoting inclusive growth."

As part of this strategy, an airport with supportive industries such as a agri-zones and logistics hubs are included in the planning. The location for the proposed airport and support land-uses is shown on Map 28 of the report, west of the N1.

The Vaal Aerozone is in-line with the Spatial Development Framework in terms of its planned land-uses, function and location within Emfuleni.

1.4.2 Vaal Aerotropolis Local Spatial Development Framework

The Local Spatial Development Framework (LSDF) report was prepared by a team of professional consultants including, WSP Group Africa (Pty) Ltd, and was submitted to the Emfuleni Local Municipality on behalf of the Vaal Aerotropolis Management Company, the developer of the proposed Vaal Aerotropolis.

This LSDF was submitted to the relevant local authorities (Sedibeng and Emfuleni) to be incorporated into their respective Spatial Development Frameworks (SDF). This will allow them to plan and budget, to obtain approval and proceed with the project. This will also create certainty for all the future relevant rights and zonings that will be granted through township establishment procedure and that engineering services can be provided as outlined in the LSDF.

The LSDF shows that the proposed project as it is planned, complies with all current legislation and policies, be it local, provincial or national, and that it is in line with current policy including Land Uses Schemes, Spatial Development Frameworks, etc. The LSDF also shows that all necessary due diligence and background research have been done in relation to the environmental impact,

transport and road networks and the provision of engineering and bulk services infrastructure to the site. The Vaal Aerotropolis will form a separate development, but part of the Vaal Special Economic Zone (SEZ) to attract investment and stimulate growth and to manage and regulate the overall development, as described in the LSDF.

The development of the Vaal Aerotropolis in Emfuleni is an initiative that will promote economic development within the Emfuleni and Sedibeng municipal areas. It is intended to help generate employment opportunities in Emfuleni and to reduce the need for Emfuleni residents to migrate or to commute over long distances to access economic opportunities in other parts of Gauteng.

The Emfuleni Local Municipality envisages an aerotropolis that will encompass the International Airport, the Logistical Hub and the Agricultural Hub. Typical of any other aerotropolis, the Vaal Aerotropolis will have an International Airport as the multimodal commercial central core, with rings of other developments permeating outwards. By nature, an airport is a powerful engine for local economic growth which attracts many aviation-linked businesses.

The Vaal Aerotropolis will, in time, develop to form clusters and corridors of airport linked commercial, high-tech, and advanced manufacturing or industrial clusters as well as logistics facilities complemented by retail, entertainment, hotels, conferences, and exhibition centres. The aim of the proposed airport as part of the Aerotropolis is to supplement the proposed Logistics Hub and to relieve the OR Tambo and Lanseria International airports and Rand Airport from the growth constraints they are experiencing. Estimates show that the OR Tambo International and Lanseria Airports are experiencing cargo and passenger growth rates that are unlikely to be satisfied by the future expansion plans of these airports. These expansion plans cannot be amended due to land and infrastructural constraints surrounding these airports. These constraints present an opportunity for the development of an international airport in Emfuleni to capture some of the growth potential experienced by the abovementioned airports.

The airport in Emfuleni is expected to provide infrastructural support and enhance business viability to the proposed Logistical Hub, which will be established immediately south of the proposed airport. In addition, the airport will impact on the land use pattern of the areas immediately surrounding the airport. These will include the Arcelor Mittal Industrial Hub, Sebokeng and Orange Farm residential areas, and Vanderbijlpark. In particular, the strip of land along the P155 (R57) will benefit from the regional airport and the proposed Logistical Hub. The newly proposed logistics hub location is within the 5.0 km radius from the proposed airport site, west of the N1 Freeway.

The proposed Vaal Logistical Hub is expected to provide O.R. Tambo with a suitable regional logistic facility to the mutual benefit of both Emfuleni and Ekurhuleni Municipalities. In addition, the logistical hub will contribute to improving burdening transport costs and traffic congestions, make Emfuleni more attractive to local and foreign investments, and create employment opportunities which may have otherwise not been realized.

The Department of Rural Development and Land Reform (DRDLR) elaborates that “Agri-hubs (AH) are located in central places in a district, preferably places with sufficient physical and social infrastructure to accommodate storage/warehousing facilities; Agri-processing facilities; packaging facilities; logistics hubs); agricultural technology demonstration parks; accommodation for extension support training; housing and recreational facilities for labourers. AH receive primary inputs from FPSUs for processing, value adding and packaging, which is through-put into the Rural Urban Market Centres or exported directly to markets”. Concepts on Agri-park, Agri- hubs and FPSUs will

be comprehensively detailed in the relevant precinct plan being formulated and to be approved in due course.

The potential benefits of the Vaal Aerotropolis are:

- It will attract new investment and have a positive impact on the socio-economic development of the Vaal region.
- It will diversify and grow the Vaal economy.
- It will create job opportunities that will address unemployment in the Vaal region.
- It will afford local people the opportunity to participate in the economy through business partnering, business establishment, training, and skills development.
- It will create a greater demand for Arcelor Mittal's manufacturing output.
- The location of the Logistics Hub at Arcelor Mittal will help minimize transport cost of materials.
- It will create various opportunities for BBBEEE and SMME's within the Vaal region; and
- Kick-start downstream manufacturing in Emfuleni.
- Reduce transport costs of goods from areas surrounding the airport and enhance tourism opportunities within the Vaal region.

1.4.3 Approval of the Vaal Aerotropolis LSDF

The LSDF was approved by the Emfuleni Council and gazetted on 18 March 2026, local Authority Notice 252 of 2026.

1.4.4 Gauteng Planning

The Gauteng Province approved the *"Growing Gauteng Together through Smart Mobility 2030"* transport policy under the World Class Air Transport section which mentions the following:

- Requirement for a dedicated cargo airport in the Gauteng Province
- Future airports must be designed according to international status
- A third airport needs to be designed and located in the Gauteng Province as a port of entry into South Africa.

The recently approved Gauteng Twenty-Five-Year Integrated Transport Master Plan (ITMP25) includes the development of the Vaal Aerotropolis.

1.4.5 Vaal Special Economic Zone

The development of a new international airport in South Africa is guided by the South African Ministry of Transport. The South African Ministry of Transport has released a Revised Strategic Plan for the 2020-2025 period which defines the method in which future international airports within South Africa are to be developed. The principles included in the design of an aerotropolis developments, Special Economic Zones (SEZ's) and economic hubs are supported and promoted by the South African National Department of Transport.

The Vaal Aerotropolis will form part of the Vaal Special Economic Zone (SEZ). The Vaal SEZ is planned separate industrial development to be located on Portion 2 and Portion 3 of the Farm Rietspruit 583 IQ, located east of the N1 in Emfuleni Local Municipality. The Vaal SEZ was proclaimed on 18 March 2026 in the Gauteng Provincial Gazette, and Environmental Authorisation was granted on 31 March 2026.

1.4.6 Summary

Government Support and Regulations:

- Development has been declared as a Mega/Catalytic Project by the Gauteng Government, the Emfuleni Local Municipality and the Sedibeng District Municipality.
- The location of the Vaal Aerotropolis is one of the areas that is to be declared as an SEZ (Special Economic Zone) by the DTIC & Provincial Government.
- The development is part of both the Emfuleni and the Sedibeng Municipalities Integrated Development Plans, as well as Spatial Development Frameworks.
- Resolutions supporting the development have been received from Mayoral Committees of both Sedibeng and Emfuleni Municipalities.
- Commitment letters have been received from both the Gauteng Departments of Road and Transport & Human Settlements.

The Aerotropolis has been included in the Spatial Development Frameworks and Integrated Development Plans of both Sedibeng District Municipality and Emfuleni Local Municipality: Airport; Logistics Hub; and Aerotropolis & Agri-zones.

1.5 Vaal Aerotropolis development details

1.5.1 Location

The Vaal Aerotropolis will be located in the Sedibeng District Municipality, +/- 10km west of National Road N1 and directly adjacent and north of Provincial Road P24-60 (R541/future K178).

The planned VAAL SEZ is a separate development, to be located east of the N1 freeway, south-east of the Vaal Aerotropolis.

Refer to Figure 1-4 for the location of the Aerotropolis, the VAAL SEZ and the local high order road network.

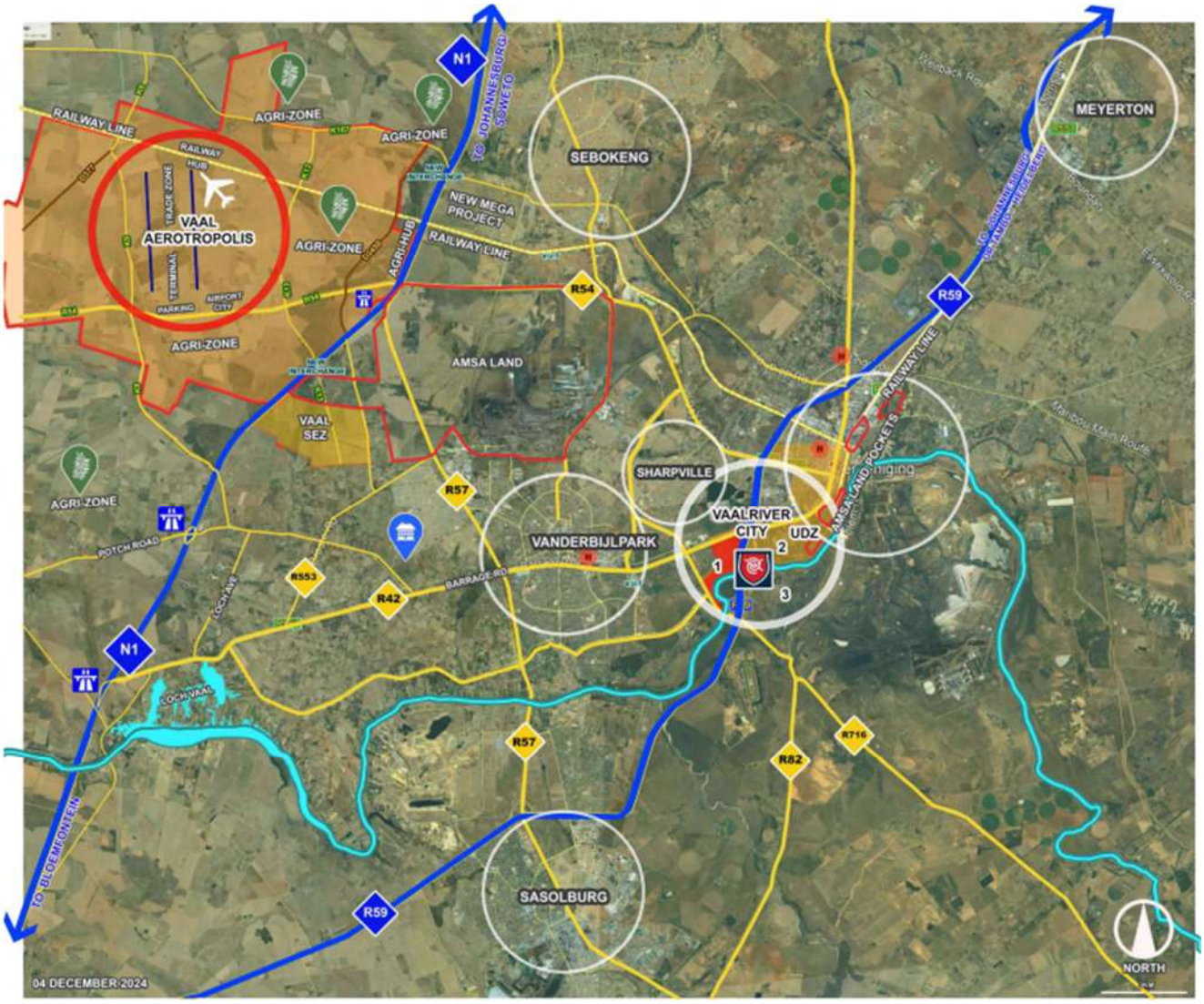


Figure 1-4 Aerotropolis location and major road network

1.5.2 Masterplan (Full development)

Refer to Figure 1.5 and **Appendix A** for the masterplan of the Vaal Aerotropolis, all three phases.

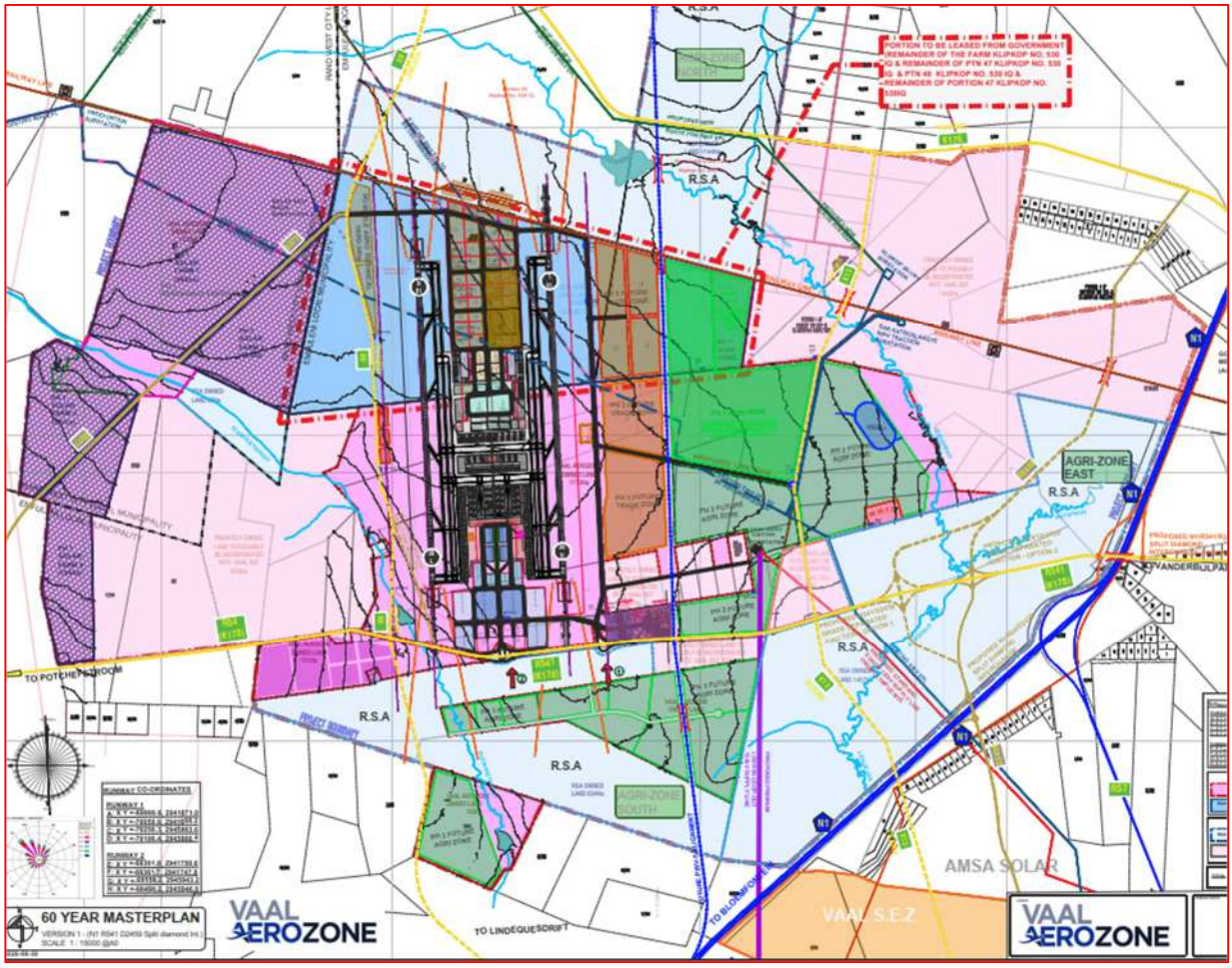


Figure 1.5 Vaal Aerotropolis 60-year Masterplan (all phases)

1.5.3 Extent of the development

The development of the Vaal Aerotropolis will include four main components, namely: the International Airport itself, the Trade Zones, a commercial hub and the surrounding Agricultural activities and a solar farm. The rate of development will be guided by the growth of the economy; however, it is envisaged that it could take up to 60 years to fully develop the Vaal Aerotropolis as outlined in the Masterplan document in a three phases approach.

The Aerotropolis construction is expected to commence in January 2029 for 4 years, and the opening of Phase 1 is scheduled for January 2033.

Note: The TIA only assessed Phase 1 of the Aerotropolis due to the long-term planned implementation of Phase 2 and Phase 3. The future phases and land-uses be revised in future within the allowance of the overall approved Masterplan, as economic needs and the market dictate.

The type and extent of the land uses of the Vaal Aerotropolis Phase 1 are shown in Table 1.1.

Table 1.1 Land Use and Extent of Development – Phase 1

Land use component	Quantum
PASSENGER TERMINAL	■ 7.2 mppa
CARGO & FREIGHT FORWARDING TERMINALS SUPPORT FACILITIES	■ Cargo terminal: 15 000m² ■ Freight Forwarding: 40 000m² ■ Airport maintenance + GSE: 23 000m² ■ Hangers: 59 000m² ■ Catering (for flights): 10 000 m²
TRADE ZONE	■ Bulk: 352 000 m² ■ Floor Area Ratio: 0.5. ■ Total building areas: 176 000 m². ■ 20% manufacturing and 80% warehousing/distribution
AIRPORT CITY (Commercial Zone)	■ Office Park = 2 600m² GLA ■ Support commercial (banking, restaurant, retail) Shopping Centre = 1400 m² GLA
AGRIZONE	■ 355 ha – Animal holding, hydroponics and any other agricultural concern for export by air ■ The Agri-Zone is an IT-integrated high-tech agricultural cluster featuring 48 Ha of climate-controlled growing area operational in Phase 1 ■ An integrated perishable supply chain, where produce enters the cold chain within minutes of processing, thereby minimizing handling time between harvest to transit-ready. ■ Provides a state-of-the-art tissue culture facility to develop new plant breeds and produce existing plant breeds under license. ■ The first live animal holding area for transport by air in South Africa. ■ Any other agricultural concern for export by air ■ Total 48 ha
SOLAR FARM	To be determined (+/- 1107ha) bd

Phase 2

The following additional land-uses will be added for Phase 2 development:

- Extension of the Airport terminal to 25 million pax per annum total
- Extension of the Cargo Terminal to 362,000 tons/yr: assuming 13.5 tons/sqm (as per IATA's medium/high level of automation)
- Extension of the Trade zone of 76 HA
- Extension of the Agrizone

Phase 3

The following additional uses will be added for Phase 3 development:

- Airport Terminal 2: 45 million pax per annum total (both terminals)
- Extension of the Cargo Terminal to 872,000 tons/yr: assuming 17 tons/sqm (as per IATA's high level of automation)
- Extension of the Trade zone of 318 HA
- Additional Agrizone located south of the P24/K178

The above land-uses and areas may change in later phases as the market demands.

1.6 Approval of the TIA

This report will be subject to approval from the following relevant road authorities:

- Sedibeng District Municipality (SDM)
- Emfuleni Local Municipality (ELM)
- Gauteng Department of Roads and Transport (GDRT)
- South African National Roads Agency Limited (SANRAL)
- An N1 interchange access application was submitted to the Gauteng Department of Roads and Transport to obtain in principle approval of the N1/P241/D2459 SDI. The interchange has been approved in principle.by GDRT, but is not preferred.
- A fatal flaw report detailing the N1 the preferred N1/P24/D2459 split diamond interchange options has been submitted to SANRAL. SANRAL has provided draft comments, and these will be incorporated in the design of the interchange.

2. Study Area and Road Network

2.1 Road network masterplan

2.1.1 Municipal road network

The Sedibeng District Municipality Road Network Plan was considered for this study. The road network planning is shown in Figure 2.1.

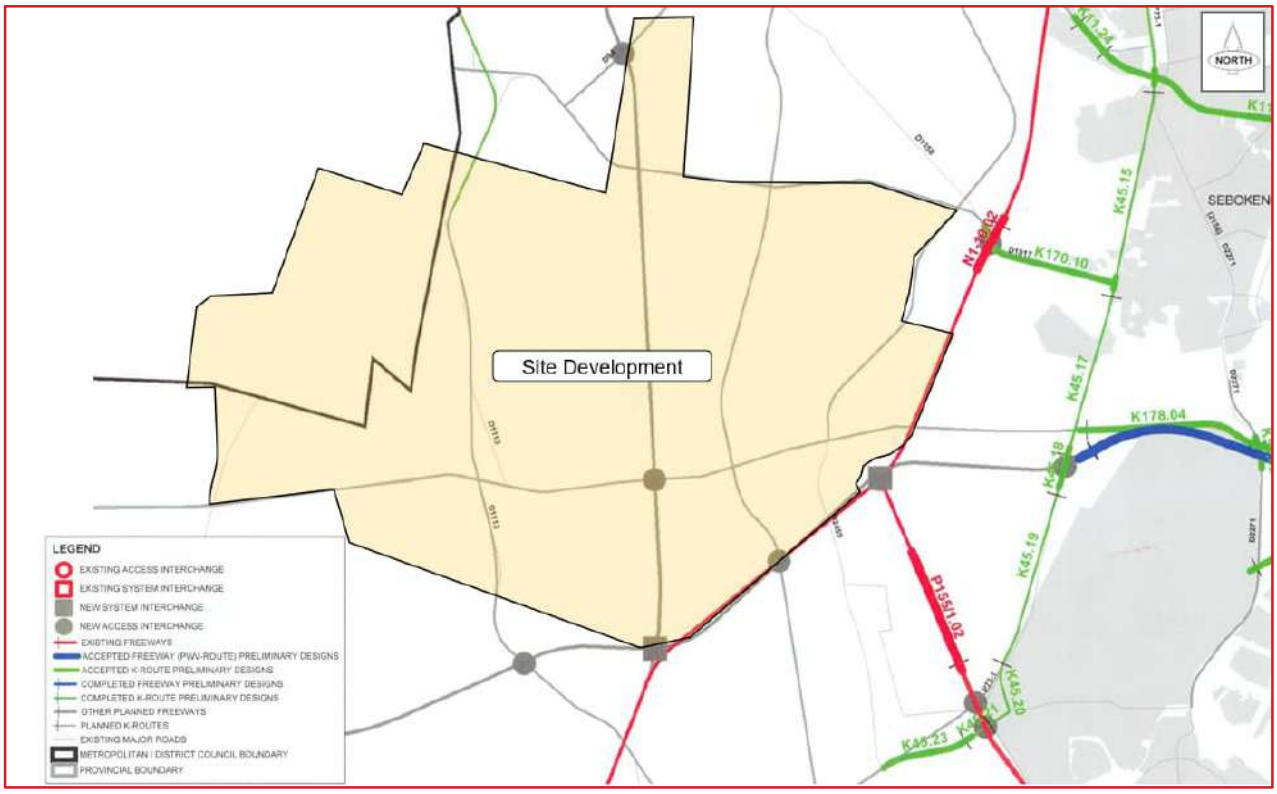


Figure 2.1 Sedibeng District Municipality Road Network Plan

2.1.2 Gauteng Provincial road network

The current Provincial Road network is shown in Figure 2.2.

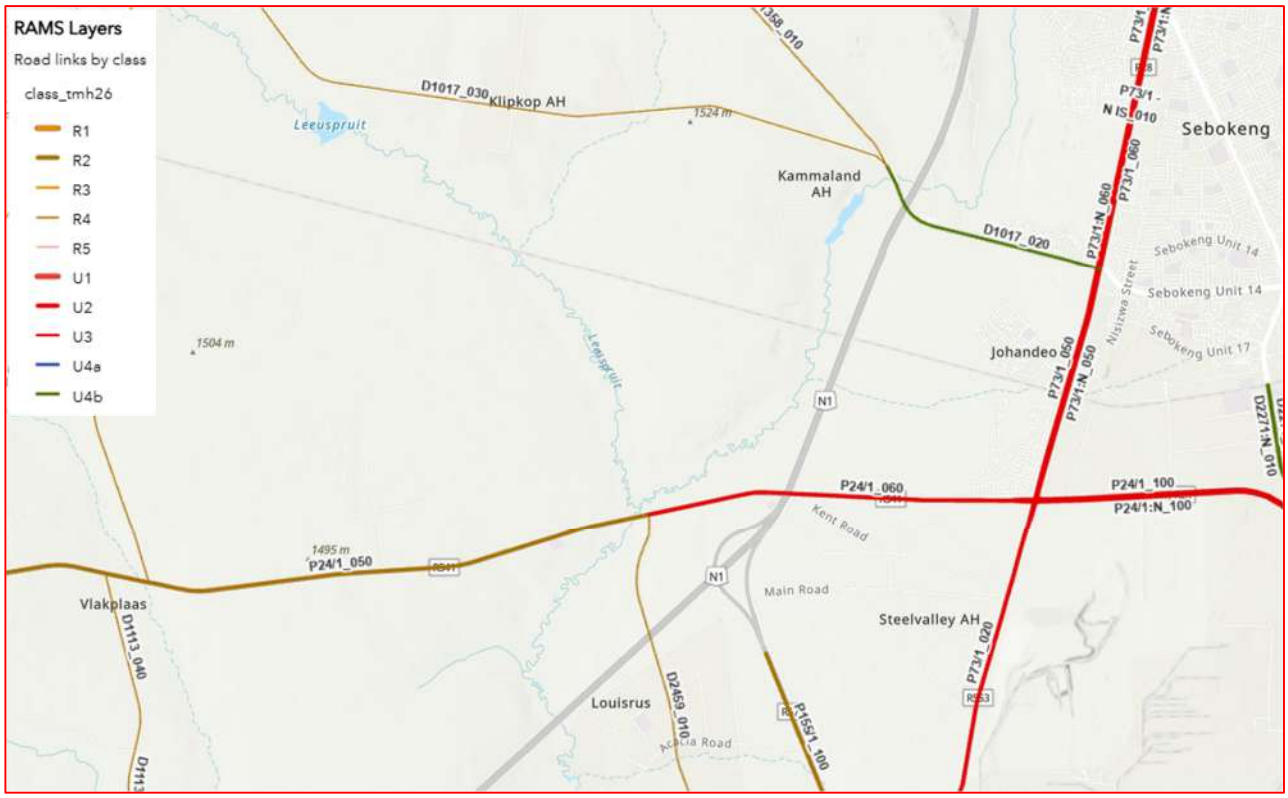


Figure 2.2 Gauteng Major Road Network - Current

Source: Gauteng RAMS Geo-spatial Decision Support System

2.1.2.1 Gauteng Provincial road network planning

The 2010 Gauteng Major Road Network (Figure 2.3) shows that the Aerotropolis will be bounded by the following current and future roads:

- **K178** – this is a provincial road classified as a Class 2 road, located directly adjacent and south of the site. The road is currently a single carriageway road (P24/) and will be converted to a dual carriageway past the site. This road is aligned on an east-west alignment and connects Vanderbijlpark, Vereeniging and SANRAL's National Freeway N3 to the east, with Potchefstroom and the N12 freeway to the west. It has a grade-separated crossing over the N1, with no planned access allowed to the N1. A portion of the road will require upgrades for Phase 1 of the Aerotropolis, pending the N1 interchange option chosen.

- **K13** – this is a provincial road classified as a Class 2 road, located east of the site and will connect the K176 to the north, the K178 and National Road N1 to the south. The road is unbuilt, and will north-south aligned. The Gauteng Strategic Major Road Network plan shows a future access interchange between the K13 and National Freeway N1 which may not be implemented as it will have substandard interchange spacing, as per SANRAL standards. A portion of the road will be required for Phase 1 of the Aerotropolis, pending the N1 interchange option chosen.
- **K9** – this is a provincial road classified as a Class 2 road, to be located to the west of the site. A portion of the road is currently the D377and D113, single carriageway unsurfaced roads. In future it will be a dual carriageway and it is a north-south aligned. The road will also be re-aligned at the intersection of the P24 to form a four-legged intersection in future. This road is not required for Phase 1 of the Aerotropolis.
- **K176** - this is a provincial road classified as Class 2 road, located to the north of the site. The road is currently a single carriageway road named D1017 and it is an east-west aligned road and connects Sebokeng to the east and the future K213 to the west. It has a grade-separated crossing over the N1, with no current access to the N1. An access interchange with the N1 is planned, and the conceptual design was done showing a conventional narrow diamond layout. A portion of the road will require upgrades and the access interchange is required for Phase 1 of the Aerotropolis, pending the N1 interchange option chosen.
- **PWV5** – this is a national road classified as a Class 1 road, to be located through the site, east of the airport. This road is not required for Phase 1 of the Aerotropolis.

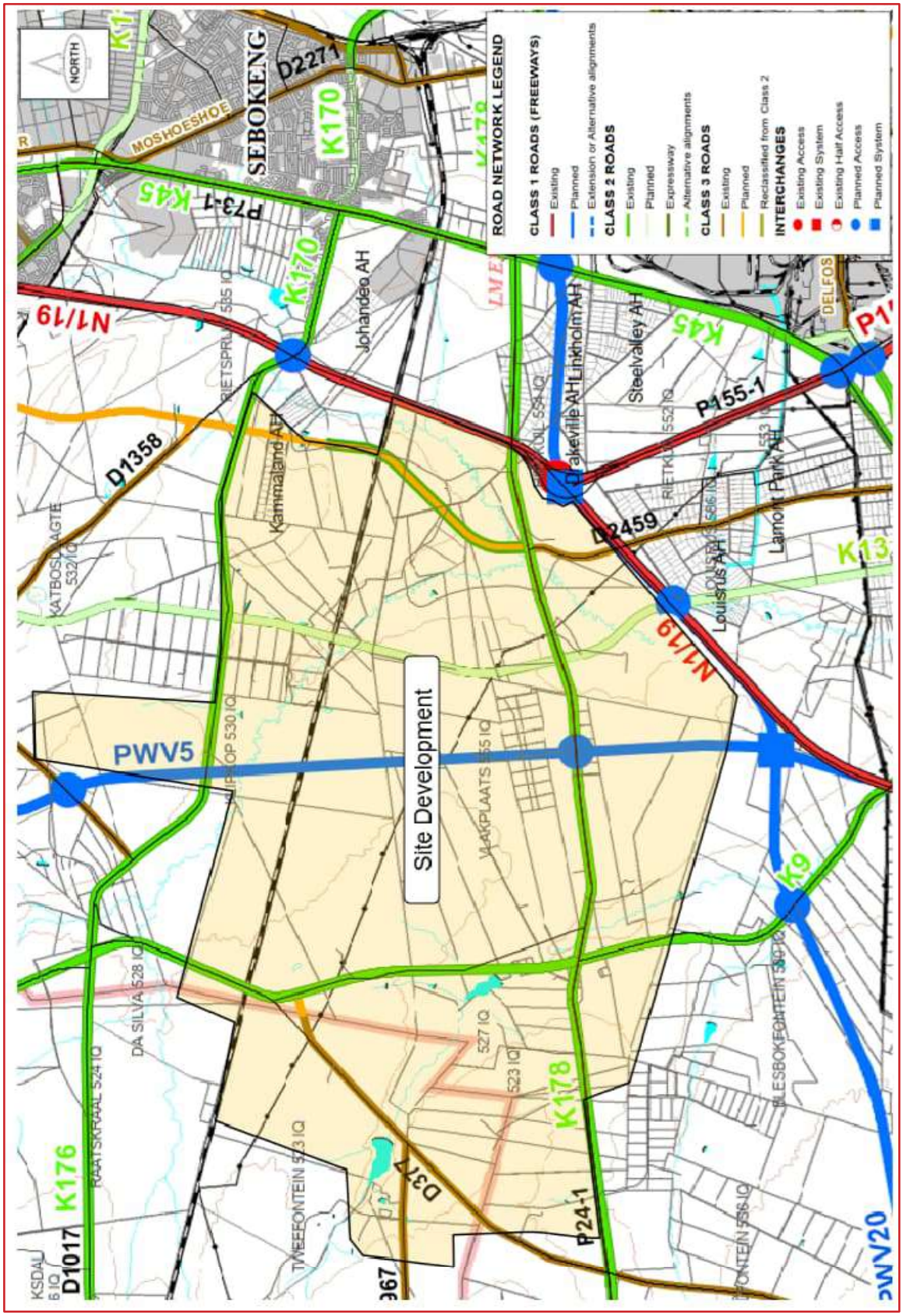


Figure 2.3 Gauteng Major Road Network Plan, May 2010

2.1.3 Affected road network

The following roads will be impacted by the development:

- **N1 Freeway -** this is a national road classified as a Class 1 road, located approximately 9.0 km east of the site and it follows a north-south alignment. This road is currently a dual carriageway with 2 lanes per direction. There is an existing partial access interchange south of the P24 which provides access to the R57 from the N1 southbound and from the R57 onto the N1 northbound.
- **P24 (future K178)** - this road is a provincial road classified as Class 2 road, located directly adjacent and south of the site. The road is currently a single carriageway with one lane per direction and will be converted to a dual carriageway. It is east-west aligned and connects Vanderbijlpark, Vereeniging and SANRAL's National Freeway N3 to the east, with Potchefstroom and the N12 freeway to the west. It has a grade-separated crossing over the N1, with no current or planned access to the N1. A section will be converted to a dual carriageway for the proposed N1 SDI.
- **D1017 (Future K176/K170)** - this road will be a Provincial Class 2 road, located north of the site. It is east-west aligned and will connect Vanderbijlpark, Vereeniging and SANRAL's National Freeway N3 to the east, with Potchefstroom and the N12 freeway to the west. It currently has a grade-separated crossing over the N1. The road is currently a single carriageway with one lane per direction. The road will not be affected by Phae 1 of the Aerotropolis.
- **P155/1 (R57) -** this is a provincial road classified as a Class 2 road, located to the east of the site; it has a single carriageway with 1 lane per direction, and follows an east-west alignment. It has a partial access interchange with the N1 highway.
- **D2459 (Roots Road) -** this is a Class 3 road located to the south-east of the site; this single carriageway road that follows a north-south alignment with one lane per direction and terminates on the P24 with a T-junction.
- **K13 -** to be located east of the site on a north-south alignment, and will connect the K176 to the K178 (P24). The road will not be affected by Phae 1 of the Aerotropolis.
- **K9 -** located directly west of the site, it is partially located on its future alignment and will connect the K178 to the south and K176 to the north of the site. The road will not be affected by Phae 1 of the Aerotropolis.

2.2 Determination of the study area

In determining the site area TMH 16 volume 1 recommends the following:

"Class 4 and 5 roads in the vicinity of the development up to the first Class 1 to 3 roads that can be reached by the Class 4 and 5 road network from the development, up to and including the first connection(s) on the Class 1 to 3 roads.

The elements shall be restricted to those within a maximum distance of 1.5km from the accesses to the site, measured along the shortest routes to the accesses, provided that there is at least one intersection within this distance. Where there is no such intersection, the distance will be extended to include at least one intersection."

TMH 16 also states that judgement should be used in selecting the intersections considered and therefore specific elements like extent of the development were also considered. A larger development will by its nature require a wider study area to be considered while for a smaller development the opposite will be true. Given the number of trips this development will generate and the nature of the development, it was determined that the following links, planned intersections and planned interchanges must be analysed.

This TIA includes the assessment of the preferred N1/P245/D2459 split diamond interchange, the upgraded Provincial roads, and the two accesses and the internal high-order road network of the Vaal Aerotropolis.

3. Data Collection

3.1 Traffic surveys

Classified traffic survey was commissioned by WSP and undertaken on Tuesday, 22 October 2024 at the following intersections:

- P24/K178 and unnamed Rd (Future K9)
- P24/K178 and unnamed Rd (Future K9 re-aligned in future)
- K170/K176 and unnamed Rd (Future K9 re-aligned in future)
- Link counts along the R57 east of the N1 interchange
- Link counts along K170/K176
- Link counts along the N1 south of the R57

An additional traffic survey was undertaken on Tuesday, 19 November 2024:

- N1 and R28/K45 interchange

The surveyed intersections and links are indicated in Figure 3.1. The full 2024 traffic volumes survey results are shown on **Appendix B**.

From the traffic counts a common peak hour was determined (the busiest hour) for each counted period and was found to be:

- Weekday AM peak hour: 06H45 – 07h45
- Weekday PM peak hour: 16h30 – 17h30

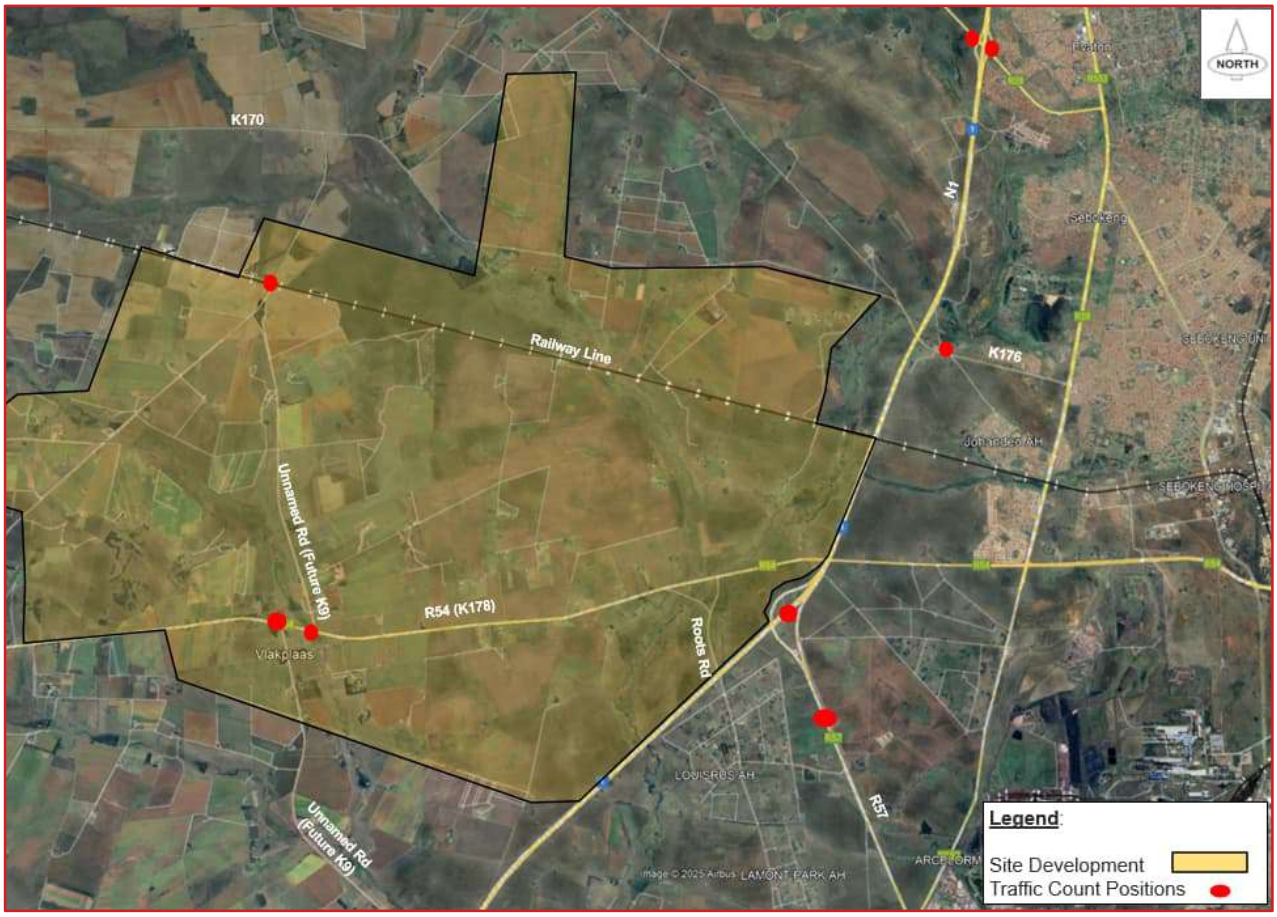


Figure 3.1 Traffic survey locations

Traffic surveys were commissioned by WSP and undertaken at King Shaka International Airport in Kwa-Zulu Natal on Tuesday 29 October 2024 at the following intersections:

- Dube Boulevard (M65) and King Shaka Drive (Access 1)
- Dube Boulevard (M65) and International Trade Avenue (Access 2)
- Dube Boulevard (M65) and Car Rental Returns (Access 3)
- Ushukela Drive (M43) and 610134 Street (Access 4)
- International Trade Avenue and 610134 Street (Internal Access)

The purpose of counting all the access intersections of King Shaka International Airport from the adjacent road network was to inform the calculation of the trip generation of the airport. King Shaka International Airport has similarities to the Vaal Aerotropolis. It is located outside a major metropolitan area with no rail connectivity, road access is from the Class 1 and Class2 road network. It also features a single runway and terminal with similar annual pax (Vaal Phase 1), and a trade/commercial support zone in the Dube Tradeport SEZ.

The trip generation is discussed in Chapter 5. The 2024 peak hour King Shaka Airport traffic volumes are shown on **Appendix B**.

3.2 Latent developments

3.2.1 Summary of developments and future traffic volumes

Several latent developments will be situated within the study area, refer to Figure 3.2 for their locations. The developments detailed below were considered, and the expected traffic of the relevant developments were added to the affected road network that will also be used by the Vaal Aerotropolis. The inclusion of these developments were agreed by Emfuleni Municipality. No other traffic studies for latent developments in the study were available.

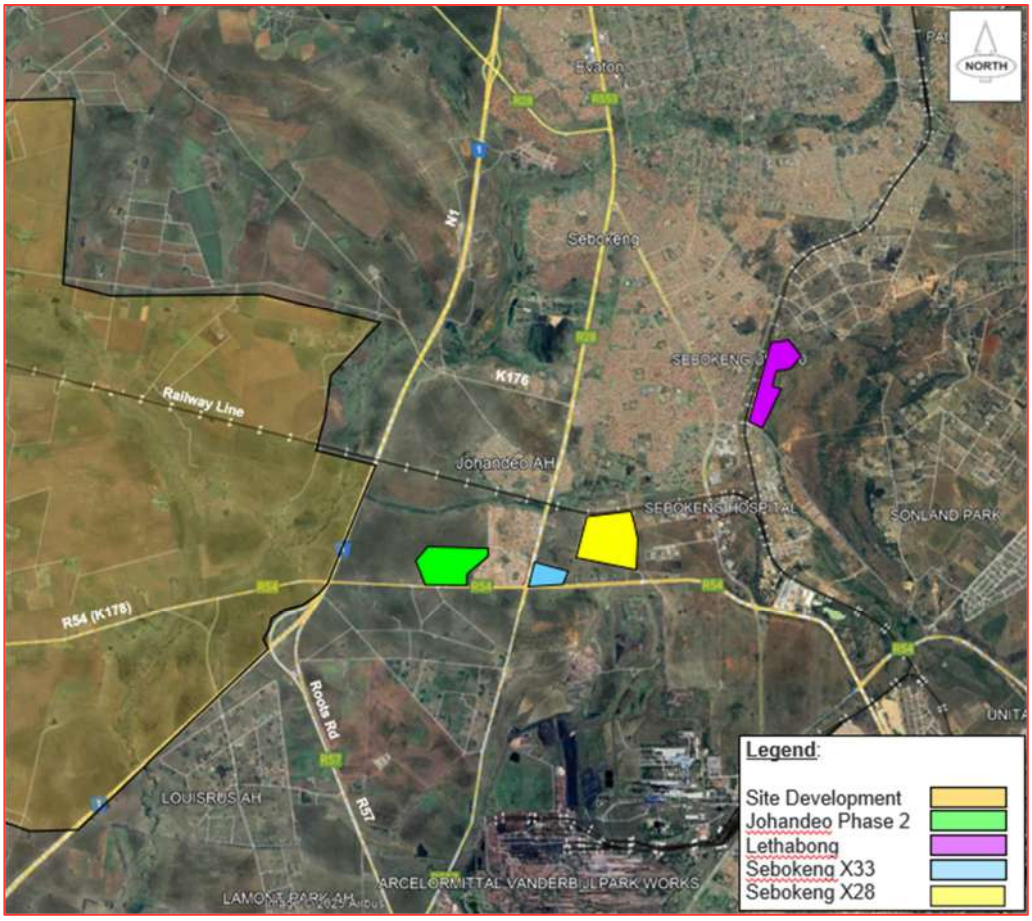


Figure 3.2 Locations of approved latent developments

- Johandeo Phase 2

The TIA for the proposed township establishment located on the Remainder of Portion 8 of the farm Johandeo Rietkuil 554-IQ was undertaken by Innovative Transport Solutions (ITS) in March 2022, and approved by Emfuleni Local Municipality. The development is for the following rights:

  - 1 280 single dwelling units
  - 273 apartments and flats
  - 5 520m2 GLA offices
  - Development trips: 800 veh/hr (weekday AM & PM)
  - Development trips on the P24: 13 veh/hr Eastbound and 28 veh/hr Westbound (weekday AM peak) , and 26 veh/hr Eastbound and 14 veh/hr Westbound (weekday PM peak).
  - <u>Summary</u>
  - N1/P24/D2459 SDI: The latent development trips were added to the P24 route as per the TIA, with an estimated 10% of this traffic using the future split diamond interchange (2.5% per ramp).
  - N1/K170/K176 access interchange: The latent development trips were added to the P24 route as per the TIA. The TIA assigned 15% of the traffic onto the R28, we assume that 25% of this development traffic will travel on the K170/K176. These volumes are under 5 veh/hr, therefore the traffic hat may use the N1 access interchange is negligible.

- Lethabong

A traffic study for the proposed residential suburb development with associated clinic and business rights on Farm Quaggafontein (alias Lapdoorns) No. 548 was undertaken by Moyeni professional engineering (MPE) in April 2020 and approved by Emfuleni Local Municipality. The development is for the following rights:

  - 731 residential 1, 407 residential 2, 2 628 residential 3
  - 14 664m² GLA business
  - A filling Station
  - 11 000m² GLA clinic, medical centre, emergencies
  - 1 500 students (primary school), 1 500 students (high school) and 360 students (creches)
  - 400 seats for the church
  - <u>Summary:</u> The TIA did not distribute any development traffic onto the P24 or the R28 (leading to the K170/K176), therefore no traffic of this development was included on the affected network.

- Sebokeng Extension 33

A TIA for the proposed township development located on the Remainder of Portion 4 of the farm Syferpan 549IQ was undertaken by Trinamics Consulting Engineers in September 2017, and approved by Emfuleni Local Municipality. The development is for the following rights:

  - 48 778m² GLA retail centre
  - Filling station
  - Development trips: 468 veh/hr (weekday AM) and 890 veh/hr (weekday PM)
  - Development trips on the P24: 73 veh/hr Eastbound and 63 veh/hr Westbound (weekday AM peak), and 94veh/hr Eastbound and 91 veh/hr Westbound (weekday PM peak).
  - Development trips on the R28: AM 73 veh/hr Eastbound, 64 veh/hr Westbound, and in the PM 106 veh/hr Eastbound and 93 veh/hr Westbound. We assume that 25% of this development traffic will travel on the K170/K176. These volumes are under 5 veh/hr, therefore the traffic that may use the N1 access interchange is negligible.
  - <u>Summary</u>
  - N1/P24/D2459 SDI: The latent development trips were added to the P24 route as per the TIA, with an estimated 10% of this traffic using the future split diamond interchange (2.5% per ramp).
  - N1/K170/K176 access interchange: The latent development trips were added to the P24 route as per the TIA, and the assumed 25% portion of the R28 traffic was included on the K170/K176.

- Sebokeng Extension 28

A TIA for the proposed township establishment of Sebokeng Extension 28 located on the Remainder of Portion 4 of the Farm Quaggasfontein, alias Lapdoorns No 548-IQ was undertaken by Tshwane Infrastructure Technologies in June 2018, and approved by Emfuleni Local Municipality. The development is for the following rights:

  - Phase 1 : 557 units Residential 1 and 574 units Residential 3
  - The Phase 1 Residential 1 units were already constructed and occupied when the traffic surveys were done, therefore this portion of the traffic (10% of the total traffic) is on the network and excluded from the latent traffic.
  - Phase 2: 2 630 units Residential 3
  - Phase 3: 948 units Residential 3
  - Phase 4: 937 units Residential 3
  - Phase 5: 1 154 units Residential 3

- Development trips: 2499 veh/hr (weekday AM & PM)
- Development trips on the P24: 28 veh/hr Eastbound and 75 veh/hr Westbound (weekday AM peak), and 73 veh/hr Eastbound and 40 veh/hr Westbound (weekday PM peak).
- Development trips on the R28: 28 veh/hr Eastbound and 75 veh/hr Westbound (weekday AM peak), and 73 veh/hr Eastbound and 40 veh/hr Westbound (weekday PM peak).
- We assume that 25% of the R28 traffic will use the K170/K176. 28 veh/hr Eastbound and 75 veh/hr Westbound (weekday AM peak), and 73 veh/hr Eastbound and 40 veh/hr Westbound (weekday PM peak).

- Summary: The development trips were added to the P24 route as per the TIA, with an estimated 10% of this traffic using the future split diamond interchange.

3.2.2 Total latent development traffic on the P24 and the future N1/P24/D2459 SDI

The latent development trips on the P24 will be 114 veh/hr Eastbound and 166 veh/hr Westbound (weekday AM peak), and 193 veh/hr Eastbound and 145 veh/hr Westbound (weekday PM peak). These latent development trips were included on the P24 route from east of the N1, with 10% of this traffic using the future split diamond interchange (2.5% per ramp). Refer to **Appendix C, Figure N1 SDI C-4**.

4. High-order road network access

4.1 Current freeway access

The development of the Vaal Aerotropolis hinges on seamless connectivity to the surrounding Class 1 and Class 2 road network, ensuring efficient access for both passengers and freight.

There is currently no suitable direct access to the N1 freeway to serve the Aerotropolis. There is a planned interchange of the future K170/K176 with the N1, contained in the Gauteng Department of Road and Transport's Strategic Major Road Network plan (May 200). However, the implementation of the interchange has not been determined by the Gauteng Department of Road and Transport.

The N1 highway within the study area is a critical mobility route facilitating local and regional connectivity. This includes the R57 partial cloverleaf interchange, two overpasses at the P24 and the D1017 (future K170/K176), and a rail underpass as shown in Figure 4.1.

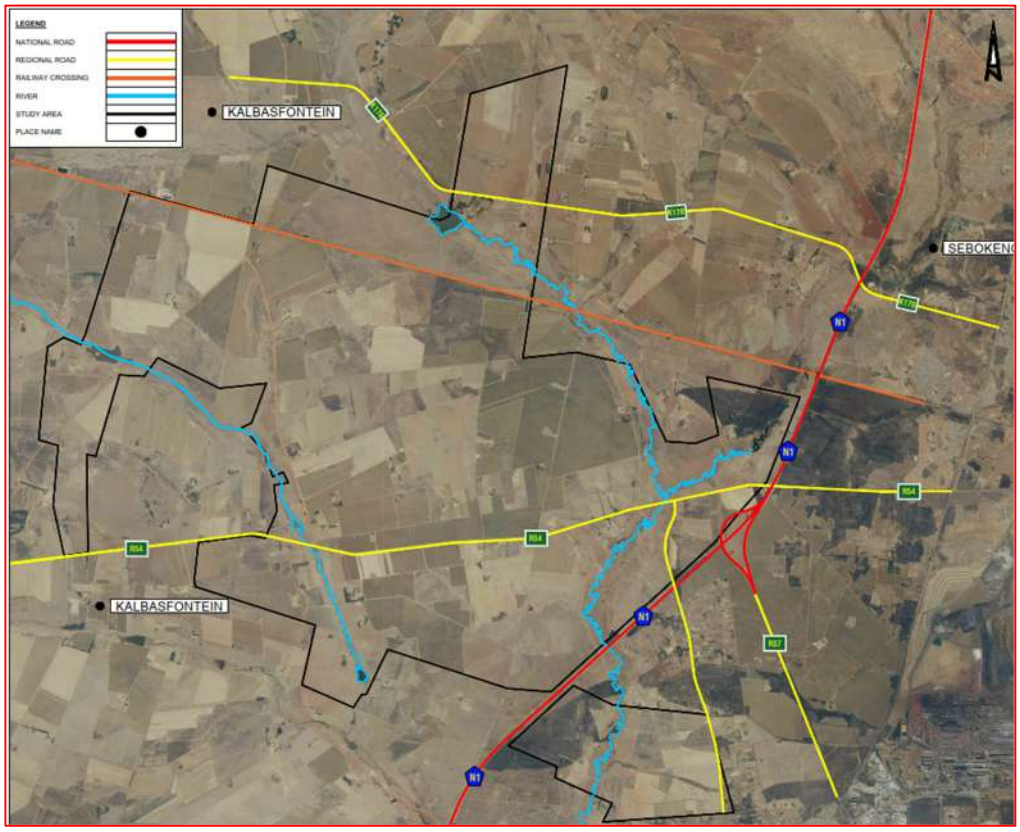


Figure 4.1 Layout of the existing major road network

The determination of the N1 interchange to serve the Aerotropolis and the local arterial road network is detailed herewith. The options that were considered and discarded are also included for reference.

4.2 Discarded interchange options

- N1/K13 interchange & K13 link to the K178

The N1/K13 interchanges was initially explored as a access interchange. However, the option was found unsuitable due to the following reasons:

- Interchange spacing: The proposed N1/K13 interchange is too close to the planned N1/R57/PWV20 interchange, failing to meet SANRAL's interchange spacing standards.
- Minimal Relocation Possibilities: While minor relocations of these interchanges were considered, they were insufficient to meet SANRAL's required spacing standards.
- Sub-standard vehicle weaving distances: The insufficient distance between the K13 and future interchanges raised significant concerns regarding vehicle weaving and traffic safety.
- The interchange option was rejected by SANRAL, and was not assessed further.

- N1/PWV20/PWV5 interchange & PWV5 link to the PWV5/K178 interchange

The option to access from the N1/PWV5/PWV20 interchange via a portion of the PWV5 to the PWV5/K178 interchange was evaluated as a potential solution. However, this option was discarded because the spacing between these two interchanges is sub-standard and does not comply with SANRAL's required interchange spacing standards. This lack of adequate spacing raises concerns regarding traffic safety, vehicle weaving distances, and overall feasibility, making the option unsuitable for implementation. The interchange option was rejected by SANRAL, and was not assessed further.

- N1 & K178 access interchange

The proposed fully directional interchange is located within the existing partial cloverleaf configuration of the N1/R57 interchange, but will not link to it. The current N1/R57 interchange provides access from the N1 to the R57, to and from the north only. The R57 is a direct access route to Vanderbijlpark. The interchange does not allow direct access from the east to and from the N1 south, or areas West of the N1 or the future Vaal Aerotropolis.

The interchange was rejected by SANRAL due to the following:

- The inclusion of the PWV20 in the N1/R57 interchange is deemed problematic as it restricts all directional access, including the ramps to the airport development.
- The lack of all movements, particularly east-west at both the N1/R57 interchange and the connection to the P24 does not promote a balanced road network and is geared at providing direct access to the airport from the N1 only.

- N1/K170/K176 access interchange

This alternative interchange option is a narrow diamond interchange with a partial cloverleaf off-ramp for southbound vehicles from the N1, and the potential for a future loop to serve westbound vehicles on the K170 to access the N1 northbound (not shown). The option was approved in principle by SANRAL, but is not preferred. It was not assessed further.

4.3 N1 / P24 / D2459 split diamond interchange

4.3.1 Background and approvals

The N1 / P24 / D2459 (Roots Road) split diamond interchange (SDI) was conceptually developed, including the upgrade of the P24, as requested by GDRT. The SDI consists of an on- and off-ramp from the N1 with the P24, and an on- and off-ramp from the N1 with the D2459.

This interchange is essential to facilitate the movement of goods, services, and people from the Class 1 and Class 2 road network, thereby driving the economic objectives of the Vaal Aerotropolis development while addressing Phase 1 operational requirements.

The interchange was presented to GDRT in an access application. The application detailing the interchange and the Provincial road upgrade was submitted to GDRT in February 2026. From a planning and access perspective the Department did not raise any objections, and it was approved in principle. Refer to the GDRT letter in Appendix G.

In order to obtain in-principle approval for a new interchange (planned or unplanned) from a National Freeway, a Fatal Flaw Report is the first requirement for SANRAL's consideration and approval. The purpose of the report is to assess if the conceptual design of a planned interchange is fatally flawed in terms of network planning considerations, interchange spacing, capacity, safety, impact on existing or planned toll facilities, and environmental aspects.

The N1 SDI Fatal Flaw Report was submitted to SANRAL in May 2026. SANRAL provided comments in July 2026 as follows:

- SANRAL stated that the principle of the split diamond interchange is accepted.
- WSP proposed a link from the R57 to N1 on-ramp, to link to the N1/P24 Western ramp terminal. This link is for additional network connectivity. The link was rejected by SANRAL and was omitted.
- SANRAL requires that the design must be tested to confirm that the SDI can be sign-posted according to- and within the specifications, recommended prior to approval. This will be re-assessed in more detail and submitted in a revised Fatal Flaw Report.

- The fatal flaw report did not detail the impact of the future PWV20 on the SDI. This was assessed in a previous fatal flaw report for other interchange options, and will be discussed and tested with GDRT. To note that SANRAL previously stated that the double loading of the PWV20 traffic onto the N1 was planned decades ago and, in other instances, has proven to be problematic. SANRAL recommended that the realignment of the PWV20 be discussed with GDRT. This will be undertaken and submitted in a revised Fatal Flaw Report.
- SANRAL stated that the roundabouts at the ramp terminals, which they requested, may under the circumstances and the location be preferrable to traffic lights. The terminals will however need to be lit.
- SANRAL requires that the future full development trips of the full Vaal Aerotropolis (Phase 1, Phase 2 and Phase 3) be tested. This will be assessed and submitted in a revised Fatal Flaw Report. To note that Emfuleni only requires an opening year analysis of the Phase 1 traffic of the Aerotropolis.

4.3.2 Interchange configuration

The preferred interchange option is shown in Figure 4-2. It is a split diamond interchange (SDI) with the following elements:

- The northern portion of the interchange has an on and off-ramp from the N1 to and from the north to the P24, with roundabout ramp terminals. The P24/ has an existing overpass over the N1.
- The southern portion of the interchange has an on and off-ramp from the N1 to and from the south to the D2459, with roundabout ramp terminals. The D2459 has an existing overpass over the N1.
- The ramp terminals are roundabouts, as required by SANRAL. Signalised terminals are not allowed by SANRAL due their rural location, which makes them more susceptible to vandalism.

The design ensures seamless integration between Sebokeng and Vanderbijlpark (east of the N1), the planned airport development (west of the N1), and the broader regional road network.

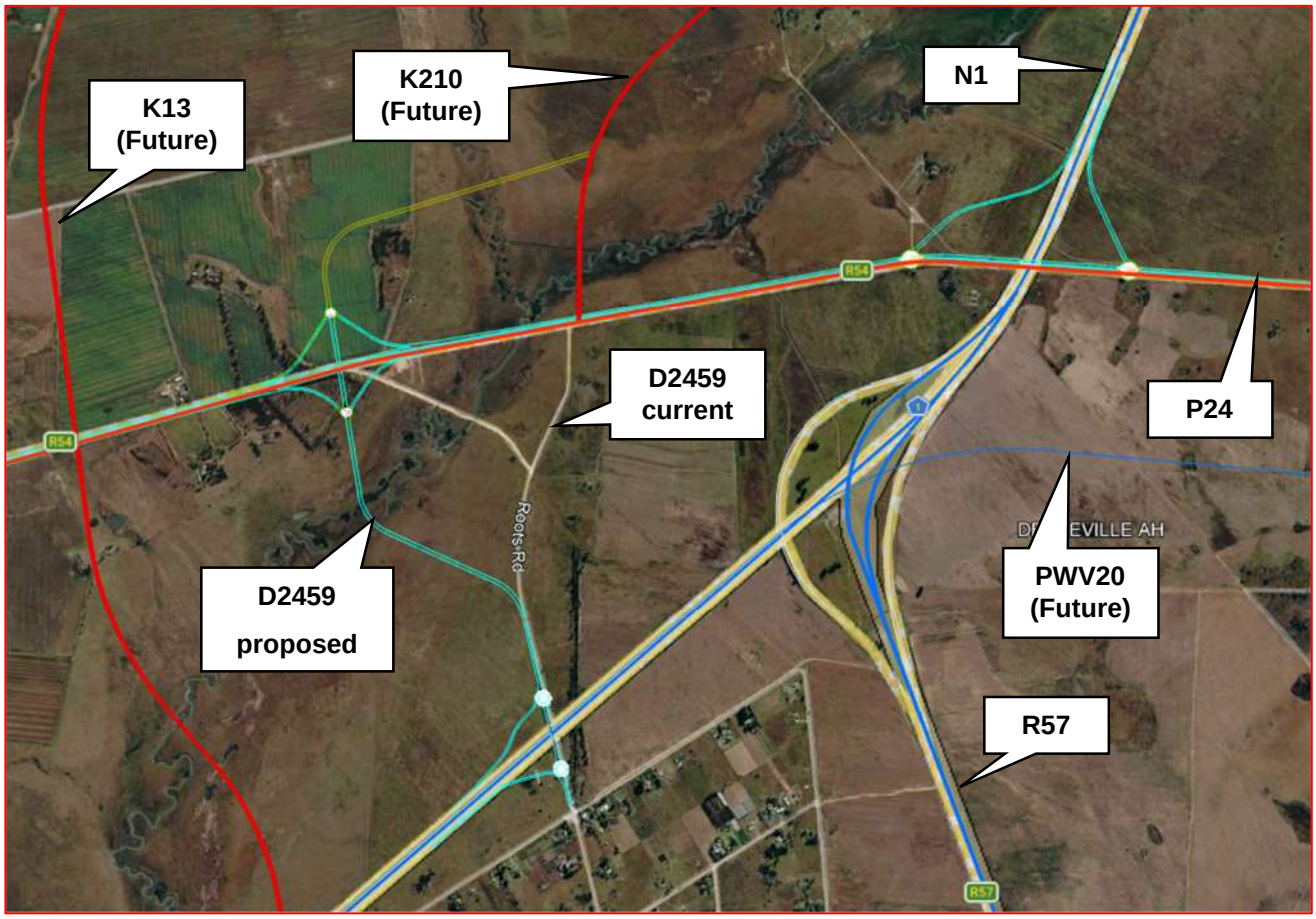


Figure 4-2 N1/P24/D2459 Split Diamond Interchange layout

4.3.3 Traffic routes to the Aerotropolis

Refer to Figure 4-3 for the traffic routes from the N1 SDI to the Aerotropolis. The proposed re-alignment of a section of the D2459 (further west from its current alignment), is shown.

- Vehicles traveling southbound on the N1 can exit via the southbound off-ramp to the eastern ramp terminal roundabout on the P24. This roundabout acts as a decision point, directing traffic either east toward Sebokeng or west toward the airport on the P24.
- Vehicles traveling northbound on the N1 can exit via the northbound off-ramp to the western ramp terminal roundabout with the D2459. This roundabout acts as a decision point, directing traffic either north-west on the D2459 to the P24 and onto the airport, or southeast on the D2459 to Vanderbijlpark.
- The northbound on-ramp from the P24 roundabout terminal to the N1 facilitates movement from both Sebokeng and the airport onto the N1 towards Johannesburg.

- The southbound on-ramp from the D2459 roundabout terminal to the N1 facilitates movement from the airport via the P24 and from Vanderbijlpark onto the N1 towards Bloemfontein.

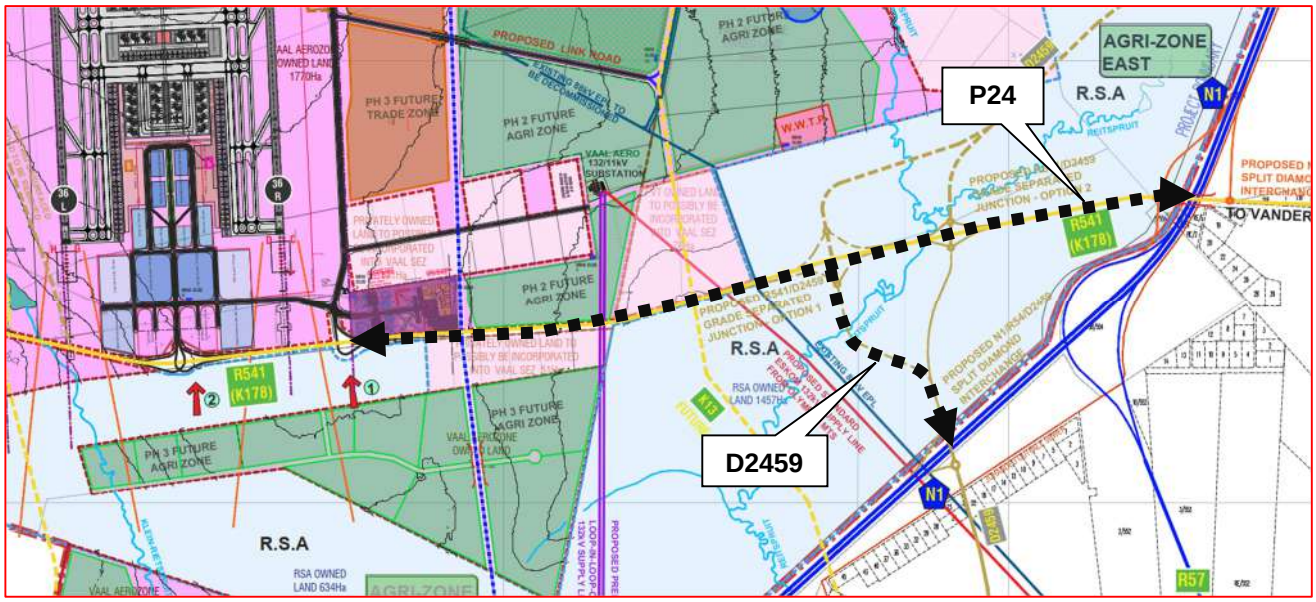


Figure 4-3 N1/P24/D2459 SDI to Aerotropolis traffic routes

4.3.4 Provincial road upgrades required

- The P24_050 and 060 is an existing single carriageway 2-way road, to be upgraded to the K178 and standards, a dual carriageway with 2 lanes per direction from east of the eastern ramp terminal of the N1 to approximately 0.45km west of Access 2 to the Airport, a grade separated intersection.
- The P24_060 (P24) overpass bridge over the N1 will be rehabilitated if required.
- The D2459 will be rehabilitated from south of the N1 at the eastern ramp terminal of the N1 to the K178. The D2459 overpass over the N1 will be rehabilitated if required.
- A grade separated narrow diamond junction is required where the D2459 terminates on the P24. Three location options were presented to GDRT:
    - Option 1: located West of the current alignment. There are no issues with the floodplain, and spacing to the proposed western ramp terminal of the N1 SDI is increased.
    - Option 2: located on the current alignment. There are potential issues with construction of the grade separated junction in the floodplain and additional cost for structures for river crossings.

- Option 3: located East of the current alignment. There are access spacing constraints to the proposed western ramp terminal of the N1 SDI.
- Refer to Figure 4-4 for the provisional alignment of Option 1 and Option 2.
- Option 1 was approved in principle by GDRT.

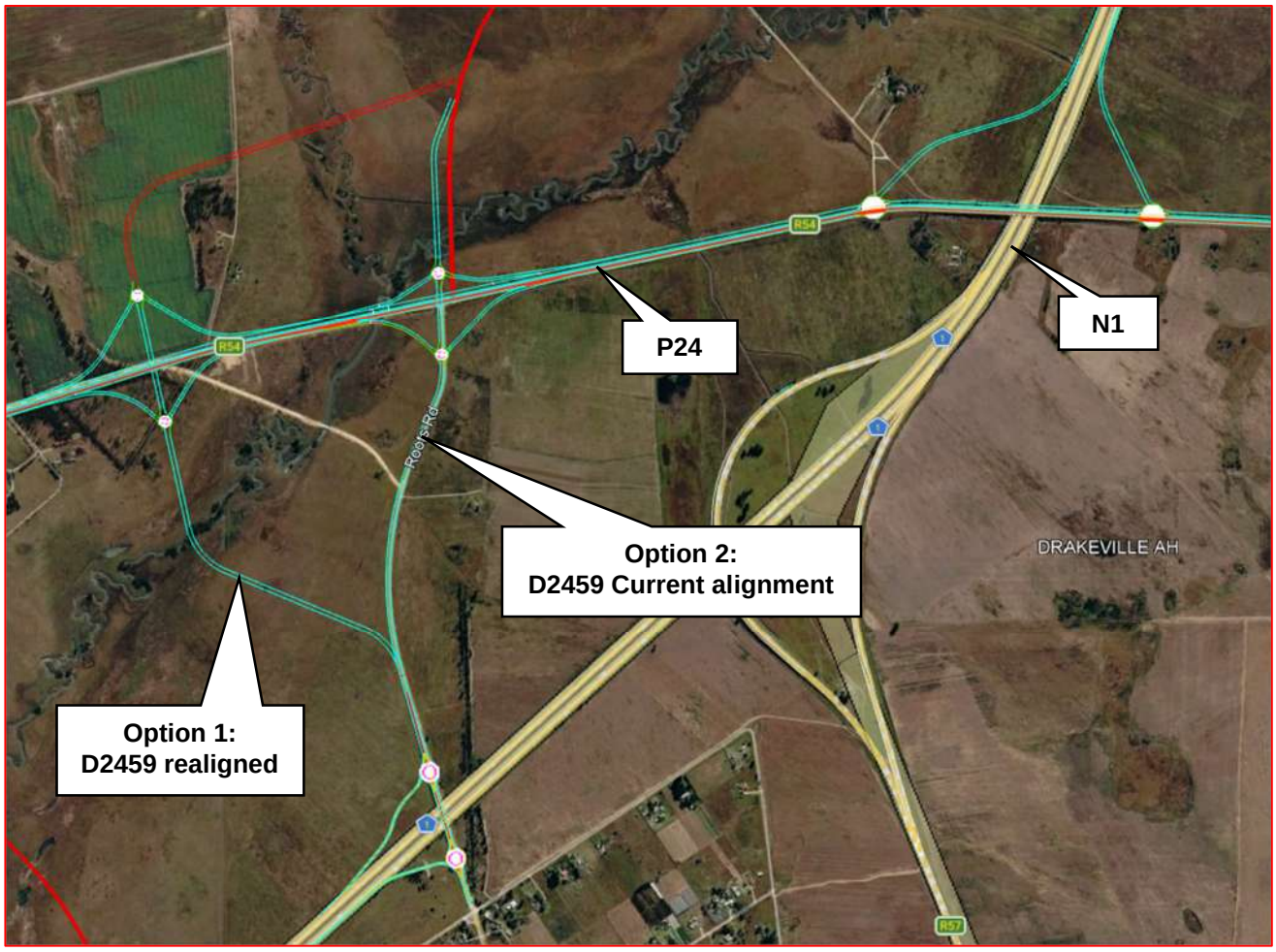


Figure 4-4 D2459 realignment options

4.3.5 Airport access and internal road network

Two grade separated accesses are required for the Vaal Aerotropolis Phase 1. Access 1 will be a free-flowing partial interchange with a westbound off-ramp from the P24 and an eastbound on-ramp to the P24. Access 2 will be a free-flow interchange with eastbound and westbound on-and off-ramps supporting all movements to and from the P24.

There are two major internal junctions within the Vaal Aerotropolis development. These two junctions connect with Access 1 and Access 2 from the P24 and provides access to the different areas of the development such as the passenger terminal, freight/cargo terminals, airport city, trade zone and Agri-zones. The low order road network within the Aerotropolis is subject to finalisation and will be assessed in due course once the Phase 1 Masterplan is finalised. Refer to Figure 4-5 for the provisional design of the access junctions and internal road network. The drawing is included in Appendix F.

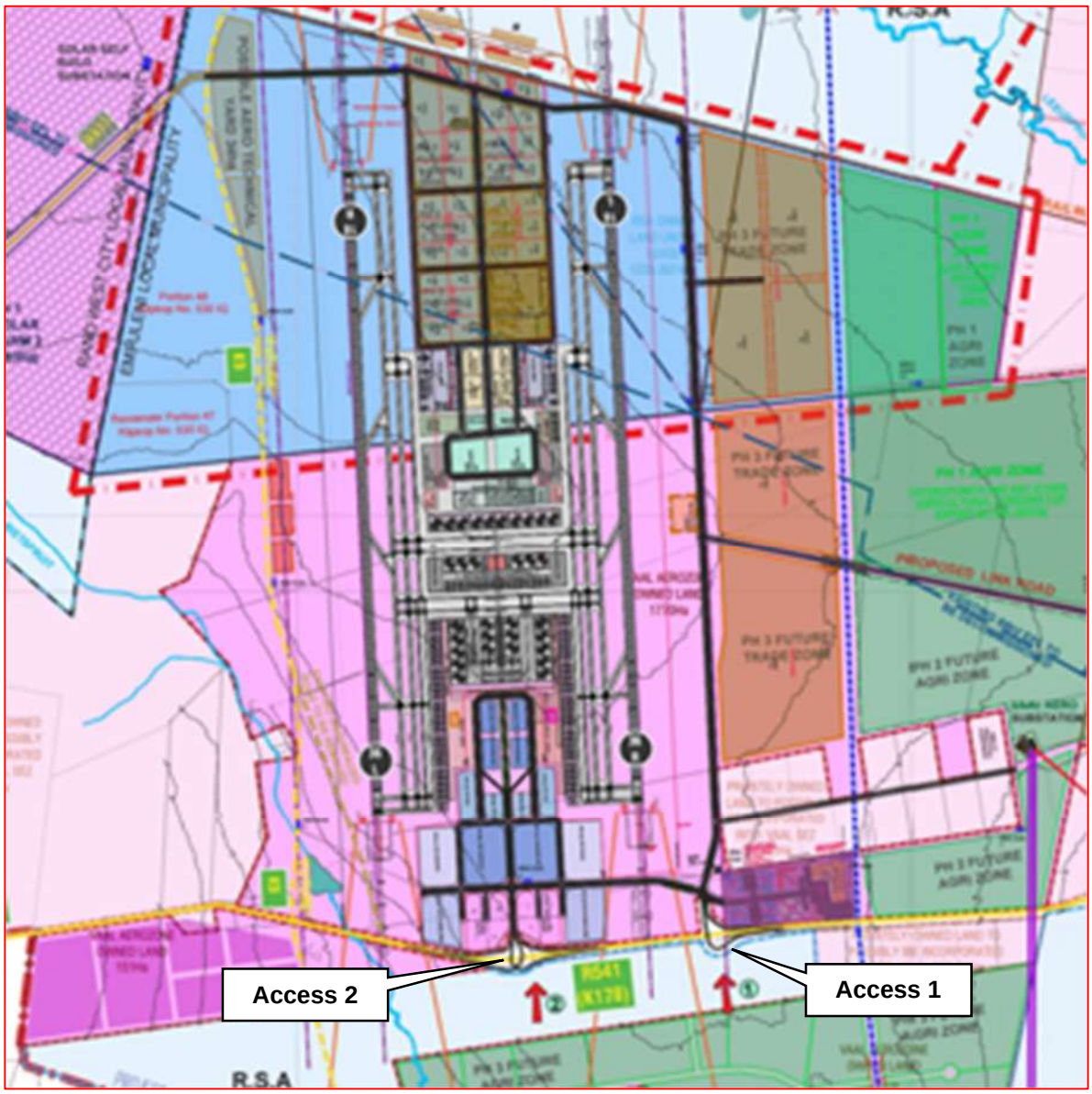


Figure 4-5 Airport accesses and internal road network layout

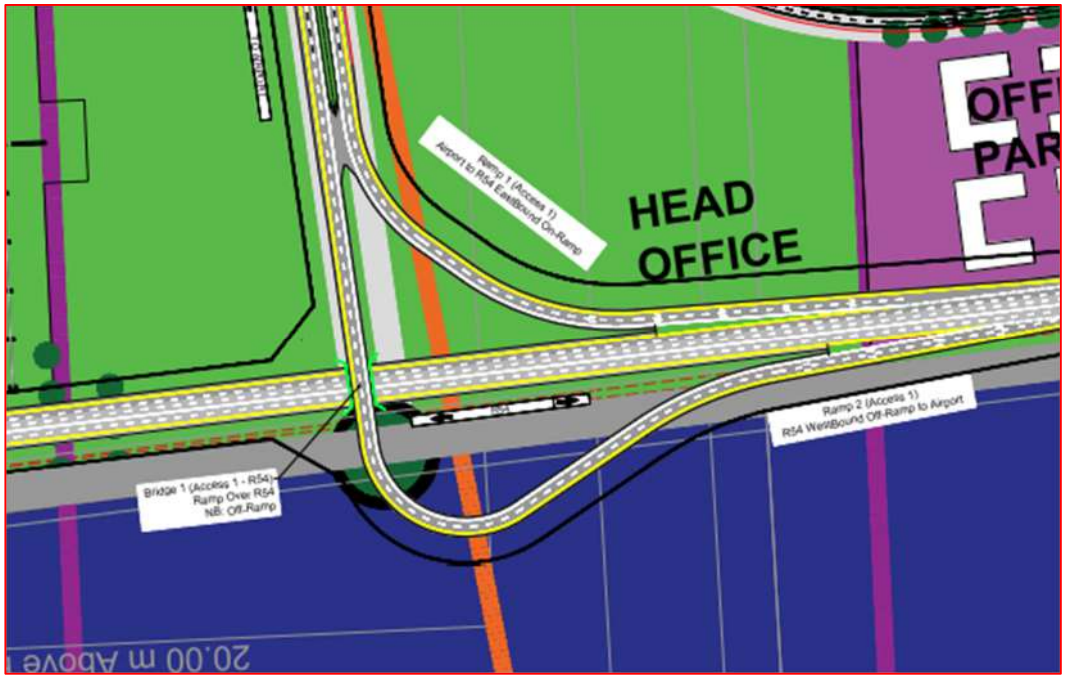


Figure 4-6 Airport access 1 (East)

Figure 4-7 Airport access 2 (West)

5. Development Trips

5.1 Trip generation

5.1.1 Passenger terminal

There are no COTO trip rates for airports in South Africa. As the Vaal Aerotropolis will be similar to the King Shaka International Airport in size and passenger throughput design, it is deemed suitable to utilise King Shaka's current trip generation as base for the trip generation of the airport.

The airport phase 1 will operate at a capacity of 7.2 million passengers per annum. The Vaal Aerotropolis passenger terminal trip generation was calculated based on the King Shaka International airport trip generation. Table 5.1 shows the calculated peak hour development trips for the passenger terminal. This trip generation is based on minimal public transport provision, similar to at King Shaka Airport.

The passenger terminal will generate **3 643** trips during the weekday AM peak hour and **3 735** during the PM peak hour.

Table 5.1 Peak Hour Development Trips (Passenger Terminal)

LAND USE	EXTENT	WEEKDAY AM PEAK			WEEKDAY PM PEAK		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Passenger Terminal	7.2 mppa	1 989	1 654	3 643	1 791	1 944	3 735
Total trips		**1 989**	**1 654**	**3 643**	**1 791**	**1 944**	**3 735**

5.1.2 Support land uses

The Airport will have several support land-uses, these are as follows, with their approximate building sizes:

- Cargo terminal: 15 000m²
- Freight Forwarding: 40 000m²
- Airport maintenance + GSE: 23 000m²
- Hangers: 59 000m²
- Catering (for flights): 10 000 m²

The trip generation of these land-uses are not a stand-along generators, and is included in the Airports overall trip generation. This is motivated as follows:

- Cargo terminal & Freight Forwarding: All cargo will arrive and depart via the Trade Zone, refer to Chapter 6.1.3. This facility will therefore not generate vehicle traffic in addition to the trade zone traffic.
- Airport maintenance + GSE, Hangers, Catering for airline support: These support facilities to the airport and airlines is similar to King Shaka International Airport. These land-uses will therefore not be stand-alone trip generators.

5.1.3 Trade zone

The size of the Trade Zone (Phase 1) is approximately 176 000 m², with a Floor Area Ratio of 0.6. The total building areas is therefore approximately 105 300 m². This is a conservative analysis assumption, as the GLA of the buildings will be less. Furthermore, no trip reduction factors were utilised (mixed -use etc.) for the trade zone, therefore this is also a conservative analysis approach.

The future split between manufacturing and warehousing and logistics facilities is not known, therefore an estimate of 20% manufacturing and 80% warehousing/distribution was assumed. It should be noted as detailed in Chapter 6.1.2, the trade zone will be the supply and receiving point for all cargo to and from the Airport, therefore they will be the sole vehicle trip generators for cargo transport.

The South African Trip Data Manual COTO TMH17 was used to calculate the trip generation for the Trade Zone.

5.1.3.1 Manufacturing

The recommended trip generation rates according to the TMH 17 for manufacturing are:

- Weekday AM peak hour – 0.6 trips per 100m² GLA, with a 80:20 (in/out) directional split; and
- Weekday PM peak hour – 0.6 trips per 100m² GLA, with a 20:80 (in/out) directional split.

5.1.3.2 Warehousing and Distribution

The recommended trip generation rates according to the TMH 17 for Warehousing and Distribution are:

- Weekday AM peak hour – 0.5 trips per 100m² GLA, with a 60:40 (in/out) directional split; and
- Weekday PM peak hour – 0.5 trips per 100m² GLA, with a 45:55 (in/out) directional split.

5.1.3.3 Trade zone trip summary

Using the COTO document the expected peak hour development trips generation for the Trade Zone was calculated and is indicated in Table 5.2. The Trade Zone will generate **915** trips during both the weekday AM and PM peak hours.

Table 5.2 Peak Hour Development Trips (Trade Zone)

LAND USE	EXTENT	WEEKDAY AM PEAK			WEEKDAY PM PEAK		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Manufacturing	35 200m² GLA	169	42	211	42	169	211
Warehousing and Distribution	140 800m² GLA	422	282	704	317	387	704
Total trips		**591**	**324**	**915**	**359**	**556**	**915**

5.1.4 Airport City (Commercial node)

The Airport city will be Business Park with predominantly offices (2600 m²), with support retail, banking and restaurants (1400m²). The South African Trip Data Manual COTO (TMH17 was used to calculate the trip generation for the Airport City as Business Park and Shopping Centre. Standard trip rates for the proposed land-uses are summarized herewith.

5.1.4.1 Shopping Centre

The recommended trip generation rates according to the TMH 17 for Shopping Centres are:

- Weekday AM peak hour – 0.6 trips per 100m² GLA, with a 65:35 (in/out) directional split; and
- Weekday PM peak hour – 3.4 trips per 100m² GLA, with a 50:50 (in/out) directional split.

A floor area factor applies to Shopping Centres.

5.1.4.2 Business Centre (Park)

The recommended trip generation rates according to the TMH 17 for a Business Park are:

- Weekday AM peak hour – 1.5 trips per 100m² GLA, with a 85:15 (in/out) directional split; and
- Weekday PM peak hour – 1.5 trips per 100m² GLA, with a 20:80 (in/out) directional split.

5.1.4.3 Airport City trip summary

Using the COTO document the expected peak hour development trips generation for the Airport City was calculated and is indicated in Table 5.3. The proposed Airport City will generate 73 trips during the weekday AM and 260 trips during the PM peak hours.

Table 5.3 Peak Hour Development Trips (Airport City)

LAND USE	EXTENT	WEEKDAY AM PEAK			WEEKDAY PM PEAK		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Shopping Centre	1400 m² GLA	26	14	40	113	113	226
Business Park	2 600 m² GLA	28	5	33	7	27	33
Total trips		**54**	**19**	**73**	**120**	**140**	**260**

5.1.5 Agri zones

Due to the lack of benchmark data, estimates were done for the agri-zone trip generation. This zone will be used as live animal holding farms, hydroponics and any other agricultural concern for export by air. It is expected that this zone would generate very low peak traffic, in the order of **100** vehicles inbound and outbound during weekday peaks, as shown in Table 5.4.

Table 5.4 Peak Hour Development Trips (Agri Zone)

LAND USE	EXTENT	WEEKDAY AM PEAK			WEEKDAY PM PEAK		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Agri Zones	355 Ha	85	15	100	15	85	100
Total trips		**85**	**15**	**100**	**15**	**85**	**100**

5.1.6 Total Vaal Aerotropolis Phase 1 trip summary

Table 5.5 shows the trip summary of each land use for Phase 1 of the Aerotropolis. It will generate approximately **4 731 veh/hr** during the AM peak hour and **5 010 veh/hr** during the PM peak hour.

Table 5.5 Total Peak Hour Development Trips (Aerotropolis Phase 1)

LAND USE	WEEKDAY AM PEAK			WEEKDAY PM PEAK		
	IN	OUT	TOTAL	IN	OUT	TOTAL
PASSENGER TERMINAL	1 989	1 654	3 643	1 791	1 944	3 735
TRADE ZONE	591	324	915	359	556	915
AIRPORT CITY	54	19	73	120	140	260
AGRIZONE	85	15	100	15	85	100
Total trips	**2720**	**2012**	**4731**	**2285**	**2725**	**5010**

6. Horizon year traffic volumes

6.1 Traffic volume scenarios

TMH 16 Volume 1 requires that a five-year and ten-year horizon be considered for developments that generate more than 2000 trips. TMH 17 recommends growth rates for developments as shown in Table 6.1.

Table 6.1 Typical Traffic Growth Rates

Development Area	Growth Rates
Low growth areas	0 – 3%
Average growth areas	3 – 4%
Above average growth areas	4 – 6%
Fast growing areas	6 – 8%
Exceptionally high growth areas	>8%

- The average growth rate of 2.0% was considered for 2024 to 2033.
- Emfuleni confirmed that only the opening year traffic analysis is required due to the long-term implementation of the future phases of the Aerotropolis.

6.1.1 N1/P24/D2459 split diamond interchange 2033 traffic

- The 2024 background peak hour traffic volumes (refer to **Appendix C, Figure N1 SDI C-1**) were subjected to a 2% growth rate to 2033, this is in line with the average growth rate as discussed. The 2033 background peak hour traffic volumes are shown in **Appendix C Figure N1 SDI C-2.**
- The total latent development trips are shown in **Appendix C Figure N1 SDI C-4**, as detailed in Chapter 3.
- The introduction of the N1/P24/D2459 split diamond interchange is expected to attract latent network traffic and some minor network trip redistribution. This is detailed in Chapter 7.

7. Capacity Analysis

7.1 Background traffic

The weekday AM and PM peak hours trip generation of the development were analysed for the interchange option and its associated road network required.

7.2 Analysis scenario

A base year analysis was not undertaken due to the absence of the proposed interchanges, major road upgrades and the accesses to the Aerotropolis. Therefore, only a 5-year horizon (2033) Scenario 1 weekday AM and PM peak analysis with the Phase 1 development traffic was undertaken.

The analysis includes the 2033 background traffic, approved latent development traffic, latent network traffic (due to new interchange), plus the Vaal Aerotropolis Phase 1 development trips.

7.3 Extent of the capacity analysis

For the N1 SDI option, the proposed interchange and affected junctions were assessed. The internal road network of the Aerotropolis is undergoing optimisation and will be finalised in due course. The analysis therefore only includes the first three major internal intersections located closest to the accesses from the P24. The two accesses were not analysed as they will be free-flowing.

Access 1

Access 1 from the P24 will be grade-separated with a free-flowing Eastbound on-ramp to the P24, and a free-flowing Westbound off-ramp from the P24. It leads to a dual lane roundabout that will primarily provide access to the Airport City, Cargo and Trade Zones and future Agrizones, and secondary access to the Airport terminal.

Access 2

Access 2 from the P24 will be a grade-separated interchange with free-flowing ramps that will provide full access to the P24. It leads to a dual lane roundabout that will primarily provide access to the Airport terminal and access to the Airport City, Cargo and Trade Zones (and future Agrizones).

The control and geometries of the interchanges, ramp terminals, junctions and grade separated junctions are discussed in Chapter 4.3.

7.4 N1 / P24 / D2459 Split Diamond interchange

7.4.1 Trip distribution and assignment

- Assumptions with respect to the expected trip distribution were based on the location of the site accesses off the P24 in relation to the surrounding road network; the existing traffic volumes, travel patterns as well as the land-uses of the proposed development.
- The latent development trips are shown in **Appendix C Figure N1 SDI C-3**.
- The interchange will result in some additional latent network trips that will access and exit the N1 at the P24 and the D2459. These volumes cannot be calculated without an in-depth regional traffic model, which is not deemed part of the scope of the TIA. These estimated latent network traffic volumes that will access and egress the N1 is shown in **Appendix C Figure N1 SDI C-4**.
- The Vaal Aerotropolis Phase 1 development trip distribution is shown in **Appendix C Figure N1 SDI C-5** and the total weekday AM and PM peak hour development trips are shown in **Appendix C Figure N1 SDI C-6**.
- The 2033 background traffic plus all latent and development traffic volumes are shown in **Appendix C Figure C-7**.

7.5 Capacity analysis results

The results of the SIDRA capacity analysis for the external and primary internal development intersections are summarised here. The detailed SIDRA analysis results are contained in **Appendix D**. Note: SIDRA determines the Level of Service (LOS) of the intersections based on average delay and the volume to capacity ratios.

7.5.1 N1/P24/D2459 SDI and road network

7.5.1.1 Scenario 1: 2033 weekday AM and PM peak hour traffic (background, latent network and developments and Phase 1)

Figure 7-1 shows the location of the current and future intersections that were analysed for the Scenario 1 traffic. This interchange option and associated road work is the preferred option to provide access to Phase 1 of the Aerotropolis.

Figure 7-2 shows the colour coding used in SIDRA 11 to depict the Level of Service per lane, as shown per intersection and peak period in the results tables.

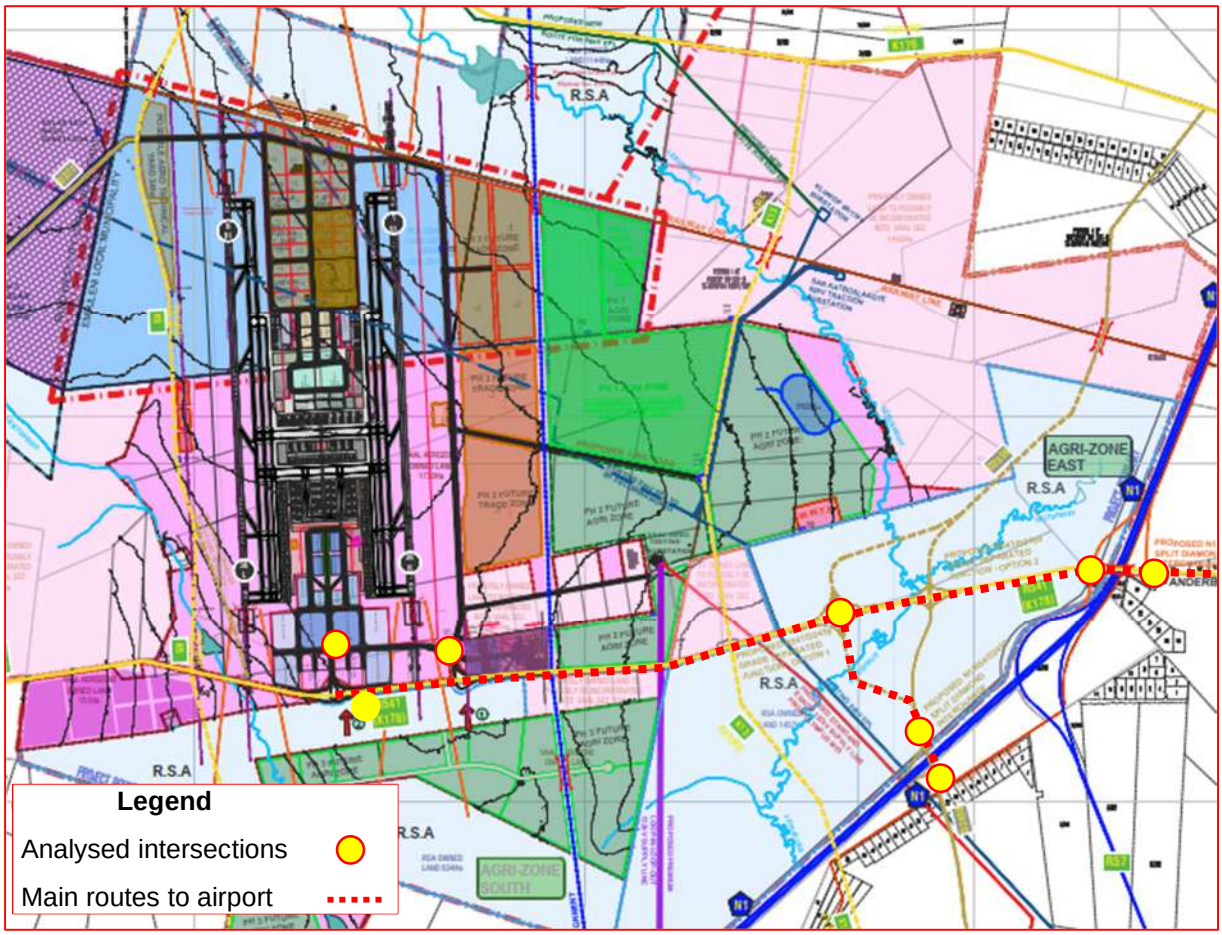


Figure 7-1 N1/P24/D2459 SDI - analysed intersections

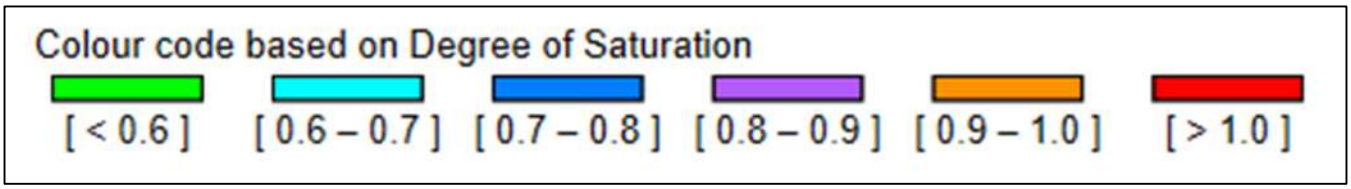
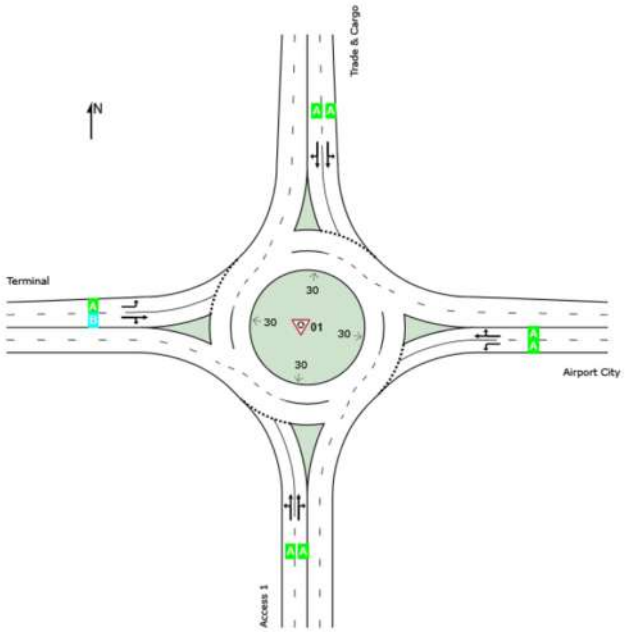
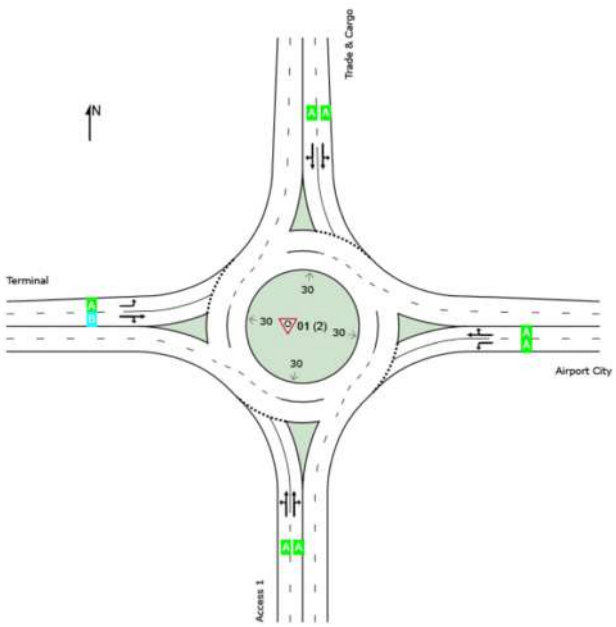


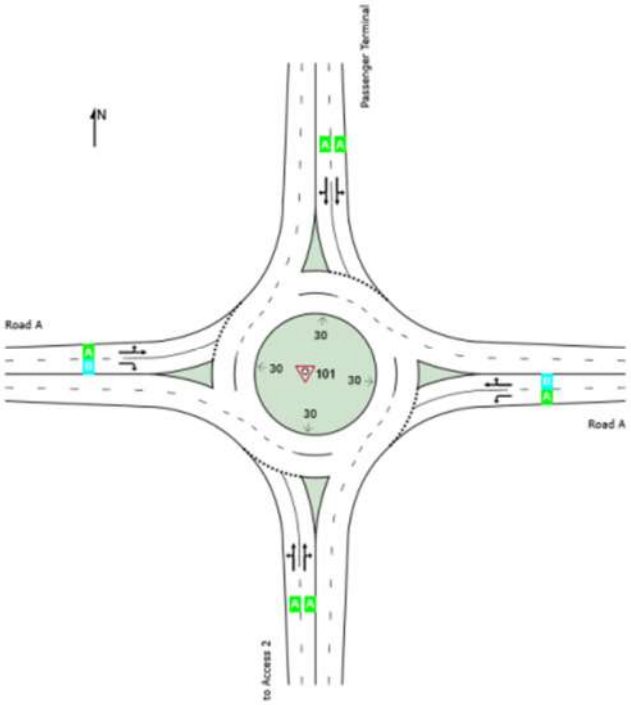
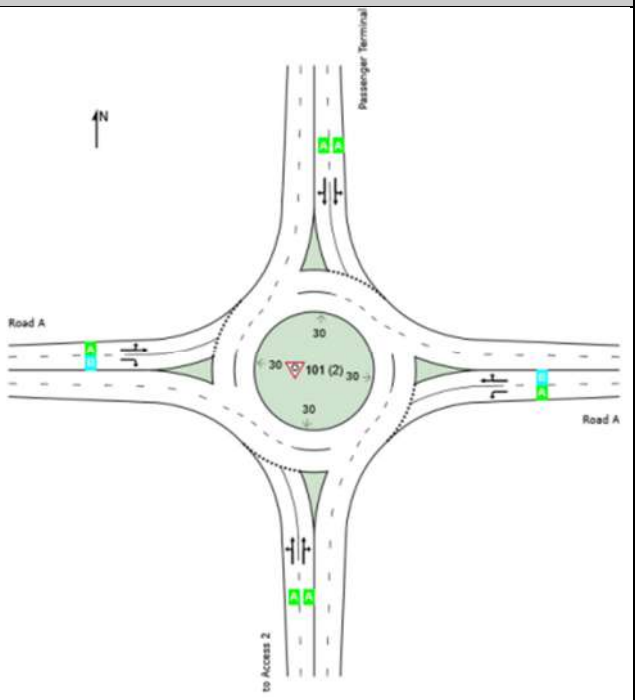
Figure 7-2 SIDRA 11 colour code Level of Service

Table 7.1 Internal intersection at Access 1 results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

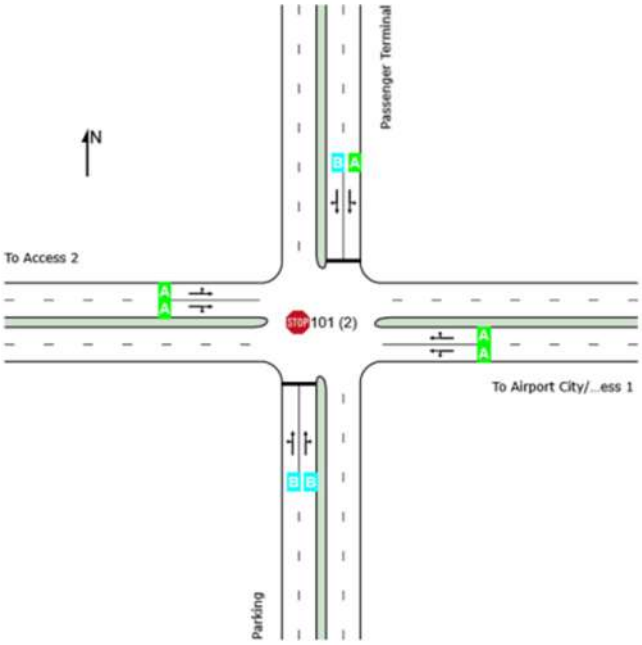
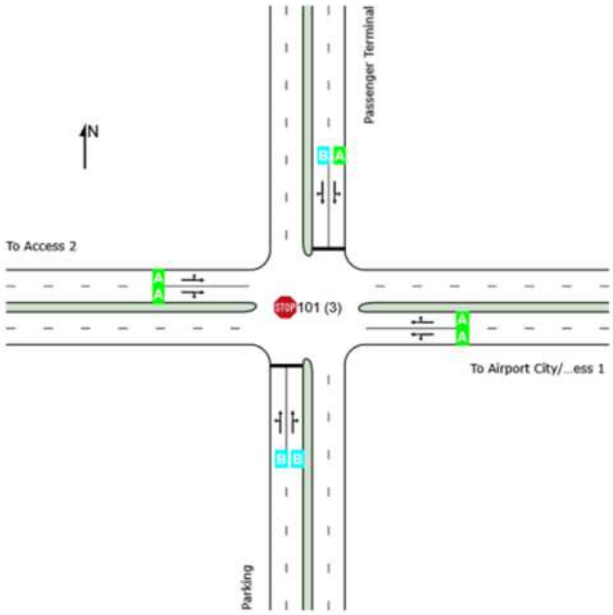
CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for both the AM and PM peak hours.
OVERALL	0.298	5.2	A	0.293	6.0	A	

Table 7.2 Internal intersection at Access 2 results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours.
OVERALL	0.694	5.0	A	0.680	5.1	A	

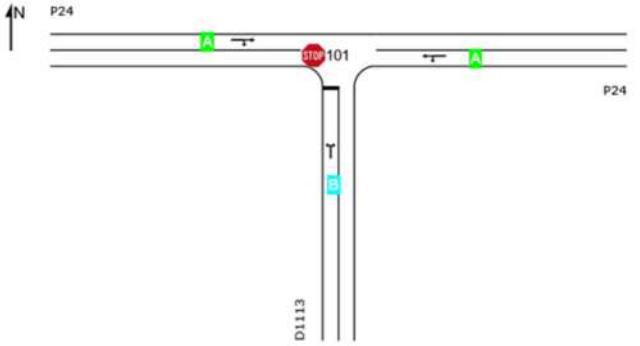
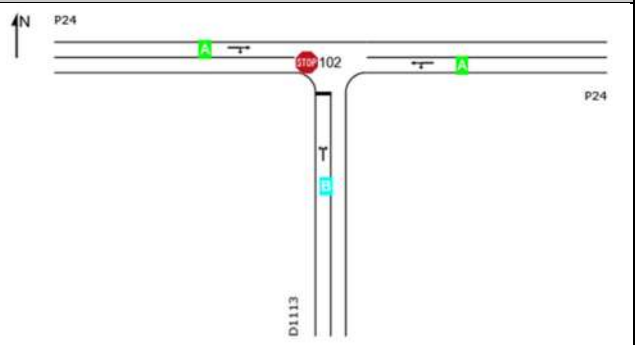
Table 7.3 Internal intersection between Access 1 & 2 results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours.
OVERALL	0.093	2.9	N/A*	0.085	2.9	N/A*	

*SIDRA does not calculate LOS for Stop controlled intersections

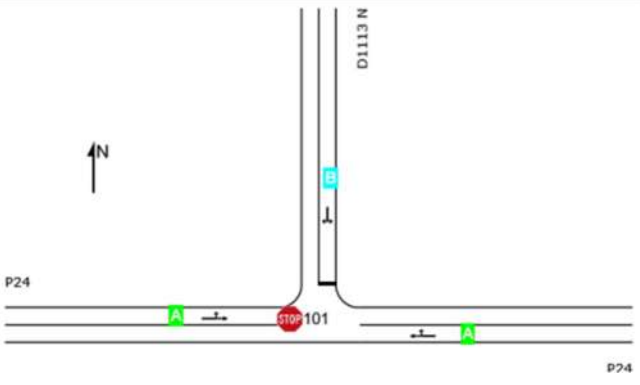
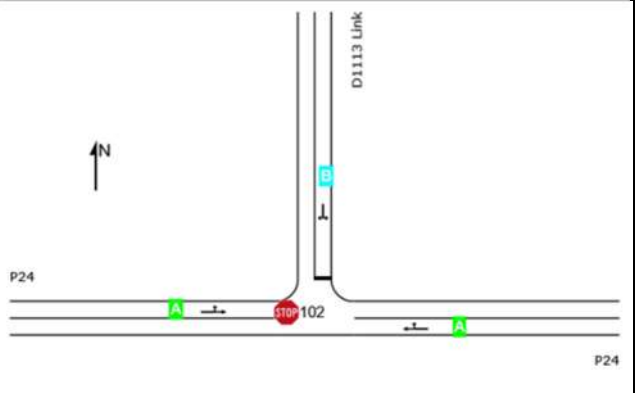
Table 7.4 P24 & D1113 (South) results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours.
OVERALL	0.233	0.7	N/A*	0.266	0.7	N/A*	

*SIDRA does not calculate LOS for Stop controlled intersections

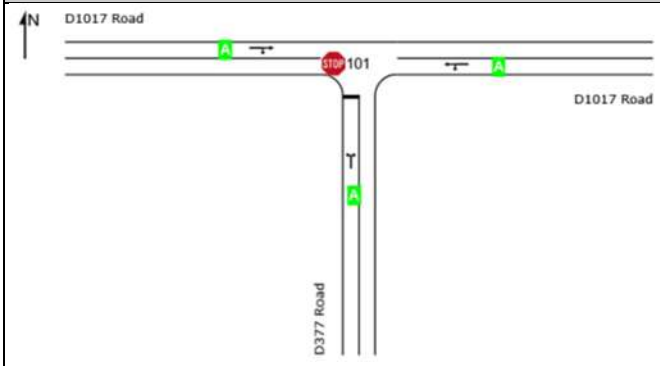
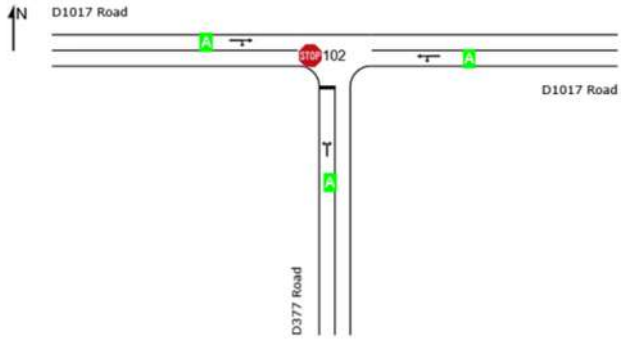
Table 7.5 P24 & D1113 (North) results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours.
OVERALL	0.244	0.7	N/A*	0.276	0.9	N/A*	

*SIDRA does not calculate LOS for Stop controlled intersections

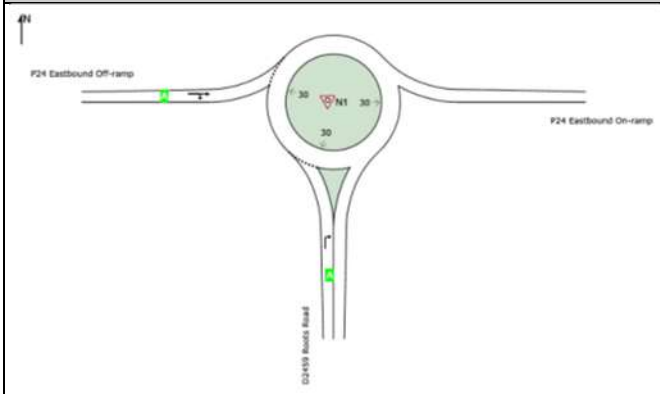
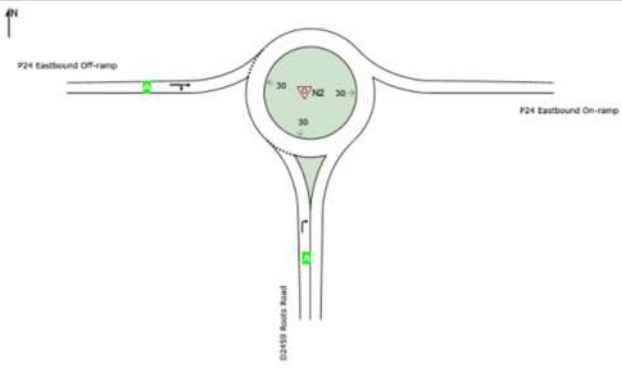
Table 7.6 D1017 and D377 results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours.
OVERALL	0.025	3.8	N/A*	0.031	3.8	N/A*	

*SIDRA does not calculate LOS for Stop controlled intersections

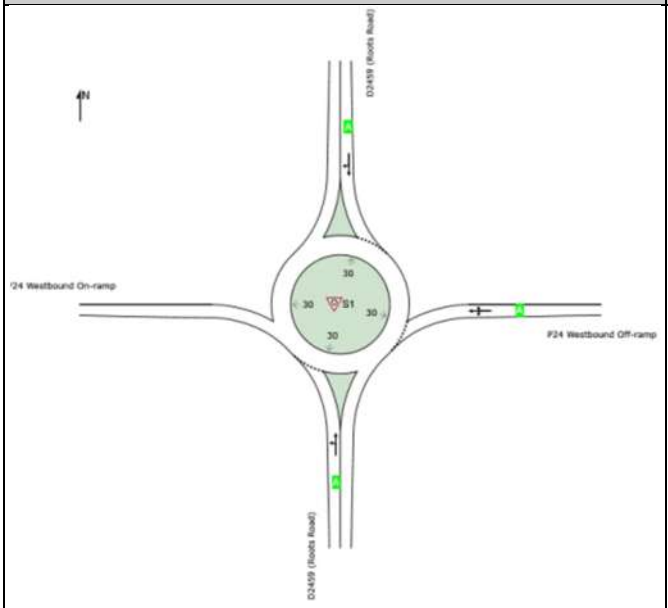
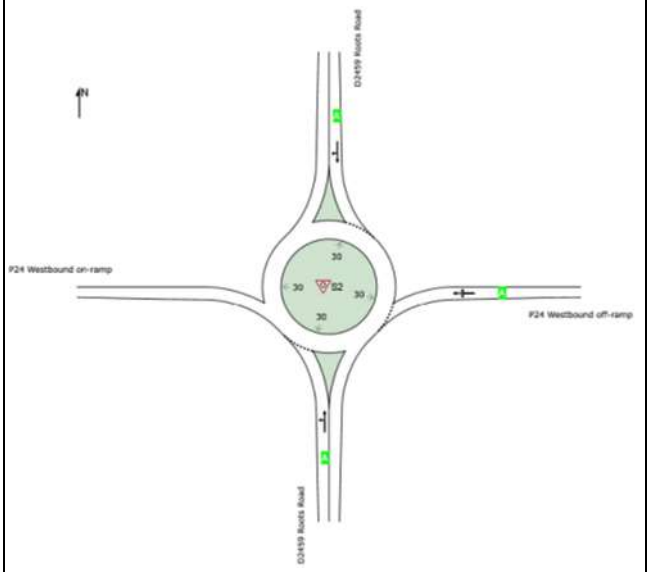
Table 7.7 P24 & D2459 northern terminal results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours*.
OVERALL	0.275	9.1	A	0.369	9.1	A	

*The terminal will also operate at acceptable LOS for a priority Stop controlled junction. The layout and results are in Appendix D.

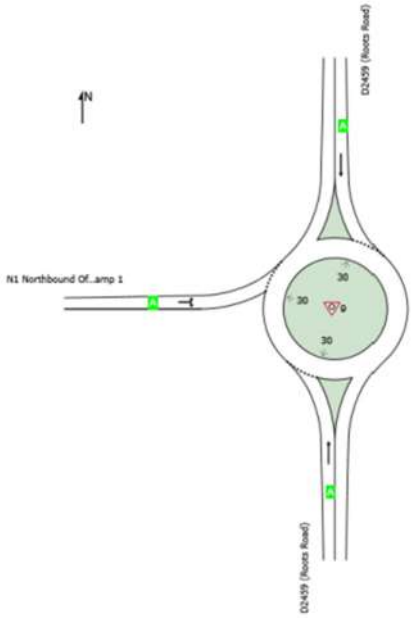
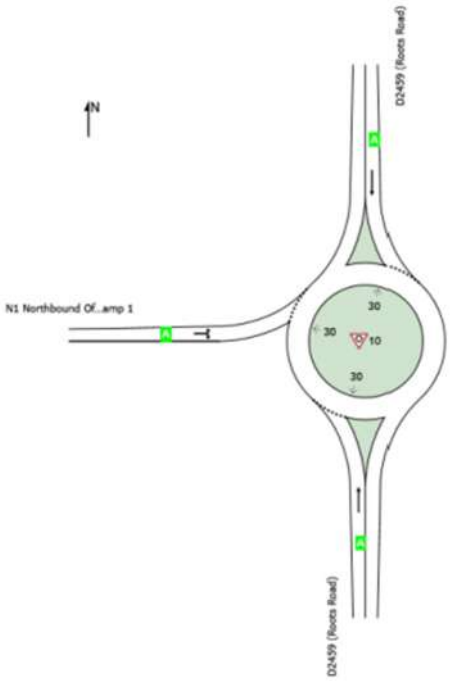
Table 7.8 P24 & D2459 southern terminal results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours*.
OVERALL	0.357	3.4	A	0.346	3.4	A	

*The terminal will also operate at acceptable LOS for a priority Stop controlled junction. The layout and results are in Appendix D.

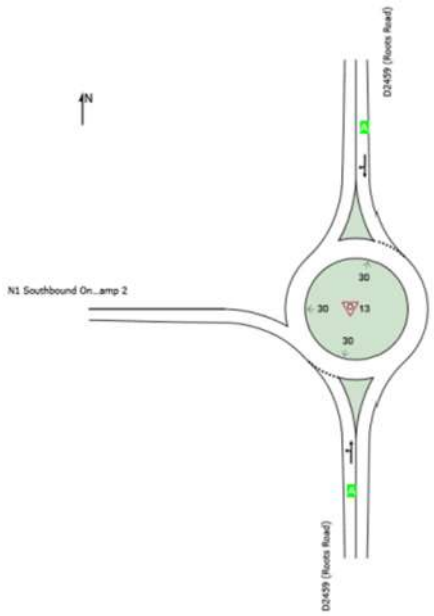
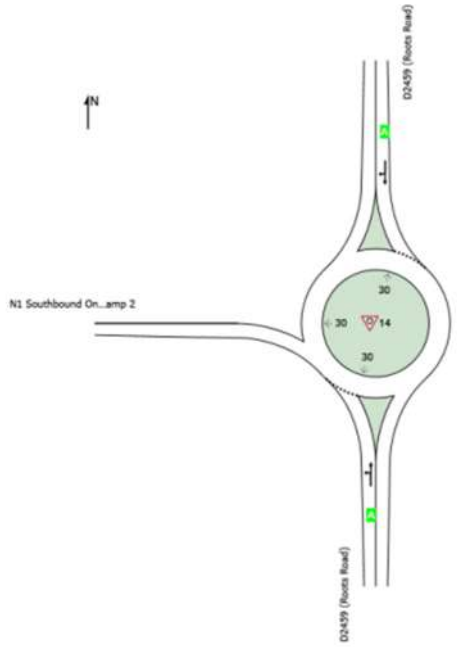
Table 7.9 N1 and D2459 northern terminal results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours*.
OVERALL	0.375	3.4	A	0.378	3.4	A	

*The terminal will also operate at acceptable LOS for a priority Stop controlled junction. The layout and results are in Appendix D.

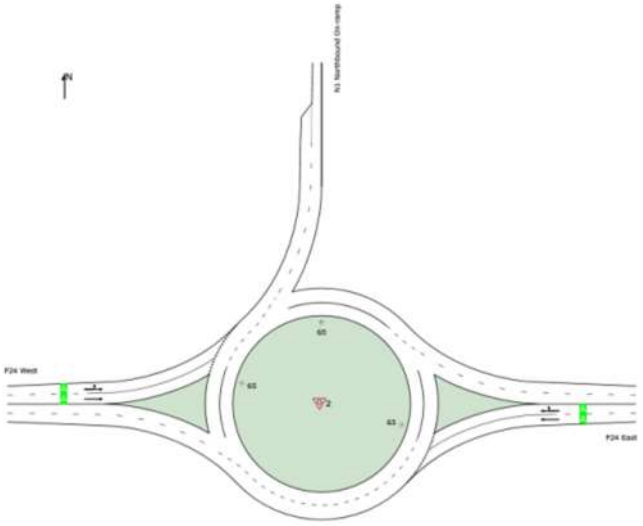
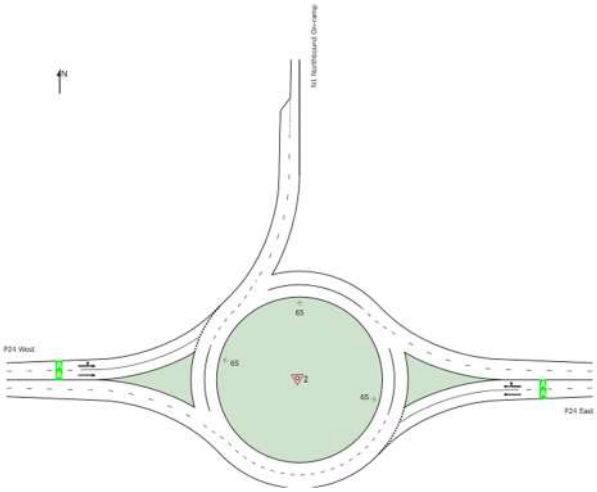
Table 7.10 D2459 & N1 southern terminal results

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours*.
OVERALL	0.279	8.5	A	0.374	8.7	A	

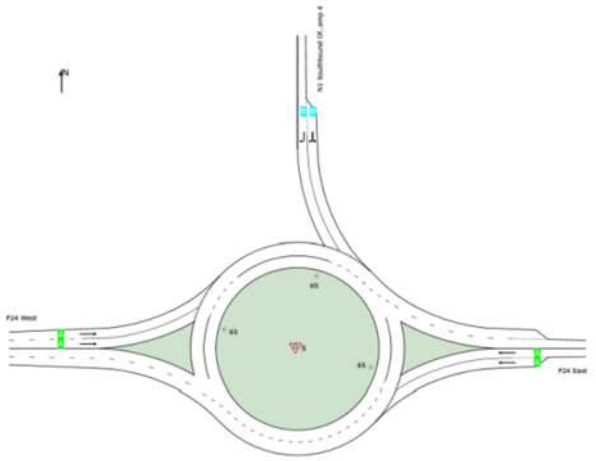
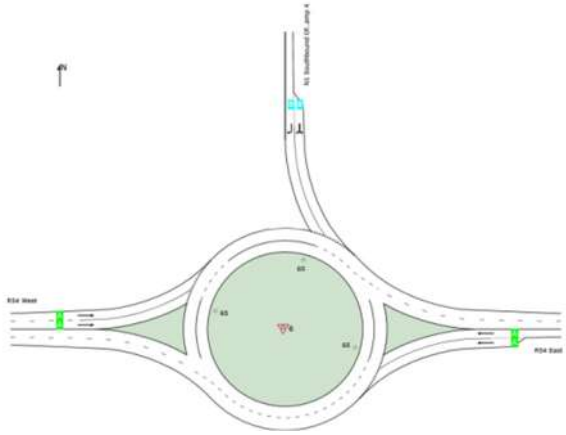
*The terminal will also operate at acceptable LOS for a priority Stop controlled junction. The layout and results are in Appendix D.

Table 7.11 N1 and P24 SDI – Western terminal

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours.
OVERALL	0.663	2.6	A	0.817	2.7	A	

Table 7.12 N1 and P24 SDI – Eastern terminal

LEVEL OF SERVICE (AM PEAK HOUR)	LEVEL OF SERVICE (PM PEAK HOUR)
	

CAPACITY ANALYSIS RESULTS							
APPROACH	AM PEAK HOUR			PM PEAK HOUR			COMMENTS
	V/C	DELAYS (S)	LOS	V/C	DELAYS (S)	LOS	The intersection will operate with acceptable levels of service for the AM and PM peak hours.
OVERALL	0.614	9.3	A	0.557	8.2	A	

7.5.1.2 Conclusions

- The existing intersections, the proposed N1/P24/D2459 split diamond interchange, the P24/D2459 grade separated junction, the accesses to the Vaal Aerotropolis and the primary internal intersections on-site; are all expected to operate very well with acceptable Levels of Service in the 2033 Horizon year. The majority of these junction will operate at LOS A.
- The roundabout terminals of the N1 with the P24, and the N1 with the D2459 are as required by SANRAL. To note the N1/D2459 terminals with priority Stop-control will operate at acceptable Levels of Service during the 2033 peak.
- The roundabout terminals of the P24 and D2459 grade separated junction is proposed for improved safety with no free-flow traffic movements, and pedestrian crossing facilities on all approaches. To note these terminals with priority Stop-control will also operate at acceptable Levels of Service during the 2033 peak.
- The proposed road upgrades will have ample spare capacity to accommodate future developments and background traffic growth. A TIA will be required when the next phase of the Aerotropolis is planned to gauge background traffic conditions and to determine what additional capacity may be required.

8. Proposed road network

The road and intersection upgrades required for the proposed Vaal Aerotropolis Phase 1 development are detailed below. **Appendix F** shows a schematic diagram of the road upgrades (including the number of lanes in each direction) required for Phase 1.

The road network upgrades are dependent on the chosen interchange option that will be taken forward. The final interchange option is subject to approval from SANRAL and the Gauteng Department of Roads and Transport.

N1 split diamond access interchange with the P24 & D2459 – PREFERRED option

- **N1 split diamond access interchange with the P24 & D2459**: This interchange will have two separate interchanges. In the North an on-and off-ramp with the P24 serving traffic to and from the North on the N1. It will serve traffic from and to the North on the N1. The two ramp terminals will be dual lane roundabouts for increased capacity and safety. In the South an on-and off-ramp with the D2459 to the N1. It will serve traffic from and to the South on the N1. The two ramp terminals will be dual lane roundabouts for increased capacity and safety, however this is a low volume interchange, and priority Stop-controlled junctions will also have ample spare capacity. The two interchange components will allow connectivity between the N1 and the P24 and the D2459 on- and off-ramps. This design ensures seamless integration between Sebokeng (east of the N1), the planned airport development (west of the N1).
- **P24 & D2459 intersection**: This intersection is currently a priority-controlled T-junction, it is proposed to convert it to a narrow diamond grade separated junction with ramp terminal roundabouts.
- **P24(K178)**: This road is currently a single carriageway; it is proposed to convert it to a dual carriageway from east of N1 interchange to West of the Airport access 1.
- Refer to **Appendix F** for the conceptual layout of the interchange and the access route.

The accesses to the Aerotropolis from the P24 will be as follows:

- **P24 - Access 1:** The access will be a partial free flow grade separated junction with access from and to the P24 east of the interchange. The interchange will not have an on or off-ramp serving the P24 to and from the west, this movement will be accommodated at Access 2.
- Refer to Appendix F for the conceptual layout of the access.

- **P24 - Access 2:** This access will be a grade-separated diamond interchange with full accessibility from the P24 (to and from the east and west). All ramps will be free flowing with an additional grade-separation between the Westbound off-ramp from the P24,, and the on-ramp Westbound to the P24.
- Refer to Appendix F for the conceptual layout of the access.

9. Parking Provision

Given the cost of parking provision at South African airports, and their importance to ensure efficient operations and vehicle circulation, adequate provision of parking at airports is a major consideration.

There is no parking provision rates for airports in South Africa. International standards were considered; however the international airports differ significantly from that of South Africa, having adequate high - capacity public transport and rail services.

To calculate the number of parking bays that are required at the airport for Phase 1, a comparison was done with two major South African Airports namely, King Shaka International Airport and Cape Town International Airport.

9.1 Cape Town International Airport parking provision

Information regarding the Cape Town International Airport parking was sourced from Airport Company South Africa. Two parkades are situated on either side of the Transport Plaza as follows: Parkade P1 lies to the North of the terminal building and consists of five storeys. It contains 4 050 parking bays with 6 elevators and 8 escalators. There are 14 dedicated parking bays per floor available for persons with disabilities. Parkade P2 lies to the south and contains 1 749 parking bays with 4 elevators on 5 storeys. Pick-up and go as well as e-hailing has moved to Parkade 2. Shade Parking P3 and P4 are located on either side of the centralised car rental facility and can be accessed via the pedestrian subways. There are a total of 1 600 parking bays in the shade parking including the Long Stay parking P5. Long stay parking is aimed at users parking for 5 days or more- the parking offering is limited to 189 bays and is operated strictly on a first come first served basis. There are a total of 7 399 parking bays available.

It must be noted that Cape Town International Airport is operating at a capacity of 10 034 352 mppa, however the airport has no known set designed maximum passenger capacity per year.

9.2 King Shaka International Airport parking provision

Information regarding the King Shaka International Airport parking was sourced from Airport Company South Africa. King Shaka International Airport has 4 car parks within the airport precinct. King Shaka International Airport has got 1540 undercover parking bays available in the multi-story parkade (MSP) as well as 4960 shaded parking bays. There are a total of **6 500** parking bays built.

In addition to this, there are 40 car parking bays for arrivals pick-up parking and a dedicated car rental car park, both being close to the passenger terminal. The car park locations are all indicated on the airport parking plan below. Golf carts are made available for transport from shaded parking bays to the terminal building.

It must be noted that King Shaka International Airport is operating at a capacity of 4 994 178 mppa, however the airport has a capacity capability of 7,5 mppa.

The number of parking bays per airports that was compared vary substantially due to design capacity and characteristics of each airport. Given that the Vaal Aerotropolis Phase 1 will be similar to King Shaka International Airport in size, passenger numbers, and rural location outside major cities, it is regarded as appropriate to use the King Shaka Airport rates to determine the number of parking bays required for the Vaal Aerotropolis. The results are presented in Table 9.1.

Table 9.1 King Shaka international Airport parking provision

Airport	Approximate Current Passenger No. (mppa)	Current Parking Provision	Bays per **1 mppa**
King Shaka International Airport	7 500 000	6 500	867

*Note: mppa – million passengers per annum

9.3 Vaal Aerotropolis Phase 1 parking provision

The rate of parking provision recommended is 867 bays per 1.0 mppa. The Vaal Aerotropolis Phase 1 is expected to operate at 7.2 mppa, therefore it is proposed that **6 243 parking bays** is provided for the terminal.

It is important to note that a convenient public transport service, such as a high-capacity bus services or a commuter rail link will reduce the need for airport parking significantly, and that passenger modal splits can be 30% or higher on public transport if adequate and attractive public transport services exist. Public Transport considerations are discussed in more detail in **Chapter 10**. There is an opportunity to reduce the number of parking bays required for future phases of the Airport by providing high-capacity public transport.

<u>The parking for the Airport terminal will be provided as follows:</u>

- Pick-up area – very short waiting time
- Drop-off area – very short waiting time
- Multi-level parkades (short & medium stay)
- Open parking – long stay
- Open parking – car rental
- Open parking – staff

TRADE & CARGO TERMINAL PARKING PROVISION

The parking provision for each development in the Trade Zone and the Cargo Terminal will be determined as per Emfuleni land-use scheme requirements. Where no comparable standards exist, international best practice will be considered. Where variations to the parking rates are deemed suitable, such as due to the mixed-use nature of the Aerotropolis, parking departures will be applied for.

AIRPORT CITY PARKING PROVISION

The parking provision for each development in the Airport City will be determined as per Emfuleni land-use scheme requirements. Where variations to the parking rates are deemed suitable, such as due to the mixed-use nature of the Aerotropolis, parking departures will be applied for.

10. Non-motorised Transport & Public Transport Assessment

10.1 Background

In terms of the National Land Transport Act 5 of 2009, section 38, it is a requirement that an assessment of the public transport be included in a traffic impact assessment.

10.2 Existing and planned public transport services and facilities

The proposed development is in close proximity to public transport services. The area is currently served by the following public transport services:

10.2.1 Minibus Taxis

Taxis operate along the N1, P24 and R57 within the study area.

10.2.2 Buses

Buses operate along the N1, P24 and R57 within the study area.

10.2.3 Railway

A railway line is located directly north of the site and can provide direct access to a planned railway hub to support the Aerotropolis. The line is east –west aligned, and connects to Vanderbijlpark and Vereeniging to the east, and Potchefstroom in the North-West Province to the west. It is a dual electrified line using a 3kV traction supply system, interlocked colour light signalling system and is categorized as an N1 line class with a maximum axle loading of 20 tons/axle according to Transnet Rail infrastructure Manager specifications.

Freight transport: This railway line can potentially provide direct access to the Aerotropolis railway hub to support rail freight transport.

Passenger transport: Passenger transport: Metrorail PRASA used to historically operate a commuter service from Vereeniging to Johannesburg Park Station via Houtheuwel and Midway stations. This served densely populated areas such as Sebokeng, Orange Farm, Lenasia, and parts of Soweto. The

service has not resumed since the Covid-19 pandemic and restoration work of the track overhead electrification system, station infrastructure and permanent way components is currently underway (with Capital funding issues noted to have delayed the process). This railway line can potentially be extended connected to the terminal buildings via a dedicated railway link and passenger hub, since the closest railway station on the PRASA corridor (Houtheuwel) is roughly 8 km North East of the Vaal Aerotropolis. with a siding to provide a commuter rail service link to the terminal buildings. A high-level desktop assessment noted that the link is feasible from a horizontal alignment perspective but would likely require a railway track link section to avoid excessive interference with existing main line freight operations. The vertical alignment requires further investigation to test the feasibility.

A detailed rail assessment should be undertaken to test the feasibility of rail transport provision to the Aerotropolis.

10.2.4 Non-Motorised Transport

There is no non-motorised transport infrastructure in the vicinity, as it is a rural area, and the P24 is a Provincial mobility route with no sidewalks, or pedestrian crossings.

10.3 Proposed new facilities

10.3.1 Public transport provision

10.3.1.1 Taxi/mini-bus, busses

The appropriate taxi (e-hailing), mini-bus taxi and bus facilities will be provided withing the Aerotropolis to provide safe access to public transport. This can include kerb-side lay-bys, taxi ranks and drop-off and pick-up facilities.

Public transport facilities such as kerb-side drop-offs are not recommended on the surrounding Provincial roads. The may cause safety issues where pedestrians cross high-speed roads when it is unsafe to do so.

10.3.1.2 Rail services

A detailed rail assessment should be undertaken to test the feasibility of rail transport provision (freight and passengers) to the Aerotropolis.

10.3.2 Non-Motorised transport

To ease and formalise the movement of pedestrians between the proposed development site and the public transport services and facilities, it is proposed that the following non-motorised transport infrastructure is provided:

- **Paved Sidewalks**

Paved sidewalks will be provided at all access roads, where appropriate. This will increase the safe movements of pedestrians within the site vicinity.

- **Pedestrian crossings**

Pedestrian Crossings will be provided at all intersections, where appropriate. This will enhance the safety of pedestrians within the site vicinity when crossing the road.

- **Taxi / Bus Ranks**

At the large public transport demand areas such as the terminal buildings and the high-density Airport City, public transport hubs such as a bus and taxi ranks will be incorporated in the site development planning.

11. Conclusions & Recommendations

11.1 Conclusions

The following conclusions are made from this Transportation Impact Assessment for the Vaal Aerotropolis Phase 1.

- The Vaal Aerotropolis is a catalytic project encompassing a new international airport with passenger terminals, a secure cargo terminal, a strategically located trade zone, surrounding agri zones and an airport city business park which will include amenities like hotel, offices and medical consulting rooms.
- The Vaal Aerotropolis will be located in the Sedibeng District Municipality, west of National Road N1 and directly adjacent to Provincial Route P24, approximately 45 minutes' drive-time from Johannesburg.
- The Vaal Aerotropolis Phase 1 is proposed to consist of several components, each of which has different land-uses and travel patterns associated with it. The components include the following:
    - Passenger Terminal: 7.2 million passengers per annum
    - Cargo/Freight Forward Terminals support facilities: Cargo terminal of 15 000m², Freight Forwarding of 40 000m², Airport maintenance + GSE of 23 000m², Hangers of 59 000m² and Catering (for flights) of 10 000 m²
    - Trade Zone: manufacturing of 35 200m² GLA and warehousing and distribution of 140 800m² GLA
    - Airport City Zone: business centre (park) of 2 6000m² GLA and shopping centre of 1 400m² GLA
    - Agrizone: Live animal holding farm as well as hydroponics and any other agricultural concern for export by air
    - Solar Farm of 1017 ha (provisional).
- Classified traffic surveys were conducted on the 22nd of October 2024 at 6 locations, and at two additional locations conducted on the 19th of November 2024, as discussed in Chapter 3.1.
- The trips of three latent developments were taken into consideration in this study, namely, Johandeo Phase 2, Lethabong and Sebokeng Extension 33, as detailed in Chapter 3.2. No other latent developments in the area will have an impact on the road network in the study area.
- An interchange access to the N1 is crucial for the Aerotropolis. Various interchange options were considered, with three interchanges as potential options. The first two options were the interchange of the N1 and P24 at the R57, and an interchange of the N1 and the K170/K176.
    - The N1 and P24 at the R57 interchange was rejected by SANRAL due to technical, spacing and safety issues, and was not considered further.
    - The interchange of the N1 and the K170/K176 was revised from a historic conceptual design. The previous narrow diamond was retained, but a single cloverleaf off-ramp from the N1 Southbound was introduced, and roundabouts at the ramp terminals. This interchange was

approved in principle by SANRAL, however it is not preferred due to its location as it will require various indirect routes to access the Airport. It was not considered further.

- A 3rd interchange option was developed: a split diamond interchange of the N1 with the P24 at the R57 and the N1 with the D2459. This design allows integration between Vanderbijlpark (east of the N1), the planned airport development (west of the N1), and the broader regional road network, with strategic additional access to the N1.
- This option was presented to SANRAL in a Fatal Flaw Report. The principle of the SDI was accepted, with various issues to address. The issues and additional requirements will be addressed and presented to SANRAL in a revised Fatal Flaw Report.

- The access routes to the Aerotropolis from the N1/P24/D2459 SDI will be via the P24 (future K178), which will be upgraded from a single carriageway to a dual carriageway with 2 lanes per direction from east of the N1 to west of the Airport Access 2. The rehabilitation and possible realignment of a section of the D2459, and a grade separated junction with the P24 is required.
- Vehicles access to the Vaal Aerotropolis will be at two accesses:
  - Access 1 from the P24 via Access 1 a free-flowing partial interchange with an eastbound on-ramp from the Airport Access Road to the P24, and a westbound off-ramp to the Airport access.
  - Access 2 will be a narrow diamond with grade-separated free-flow on-and off-ramps to the P24 westbound and eastbound. It will support all movements between the P24 and the Airport.
- The internal road network of the Airport will have two major primary roundabout intersections to distribute traffic from the two external accesses off the P24 to the destinations such as the terminal, Airport City and the Trade & Cargo zone. The balance of the network is subject to finalisation and will be assessed in due course.
- There are no parking standards in South Africa for international airports. Therefore to determine the number of parking bays that are required for Phase 1, a comparison was done with two major South African Airports namely, King Shaka International Airport and Cape Town International Airport.
- There are 7 399 parking bays at Cape Town International Airport and it is operating at a capacity of 10 034 352 mppa. The airport has no set designed maximum passenger capacity per year that could be determined. There are 6 500 parking bays at King Shaka International Airport and it is operating at a capacity of 4 994 178 mppa, with the airport having a capacity capability of 7,5 mppa. This is a parking provision rate of 867 bays per 1 000 000 million passengers per year at full capacity.
- The Vaal Aerotropolis Phase 1 will be similar to the King Shaka International Airport in size, passenger numbers and rural location away from major cities. Phase 1 is expected to operate at 7.2 mppa, therefore it is proposed to use the King Shaka parking rates. The proposed parking provision for Phase 1 is 6 243 parking bays for the terminal. Parking provision for the other land-uses such as the Airport City commercial area and the trade zones will be determined from Emfuleni standards or national or international benchmarks where appropriate.
- The Phase 1 development will generate 4 731 veh/hr and 5 010 veh/hr during the weekday AM and PM peak hours respectively as shown described in Chapter 5.1.

- The capacity analysis was undertaken for a 2033 horizon year, when Phase 1 of the Aerotropolis will open. The capacity analysis was conducted for the N1 SDI and associated road network, all affected junctions, and the three primary internal intersections in the Airport precinct. The capacity analysis confirmed that the proposed N1 SDI and road network will have ample spare capacity to serve Phase 1 of the Aerotropolis.
- The final recommended road and intersection upgrades required for the Phase 1 development is discussed in Chapter 8.
- A rail assessment falls outside the scope of this TIA. It is noted that it is the intention to provide freight transport to the Aerotropolis via the existing dual electrified line that is located in the northern part of the site. There is also a potential to provide passenger rail connectivity by connecting to the PRASA services between Johannesburg and Vanderbijlpark. This service is not in use, and the rail infrastructure is undergoing refurbishment.
- Non-motorised and public transport assessment was done as stated on Section 10 of this report, with proposals for on-site infrastructure in support of public transport drop-off and NMT.

11.2 Recommendations

From a traffic engineering perspective, the proposed Vaal Aerotropolis Phase 1 development should be supported subject to the following:

- The implementation of the N1/P24/D2459 split diamond interchange.
- Upgrade and construction of the Provincial roads and their junctions, including the grade separated junction of the D2459 and P24, and the two garde separated accesses to the Airport.
- Phased implementation of the low-order internal road network and junctions of the Aerotropolis.
- Phased implementation of non-motorised and public transport infrastructure where required.
- Phased implementation of the proposed number of parking bays per land-use to accommodate the planned passenger and development growth.
- The road infrastructure (upgrades and new) will be subject to obtaining all statutory approvals from Emfuleni Council, GDRT, SANRAL, the Environmental aspect, and any other authority.

12. References

- TMH 16 Volume 1, South African Traffic Impact and Site Traffic Assessment Manual, Version 1.0, Committee of Transport Officials (COTO) August 2012
- TMH 16 Volume 2, South African Traffic Impact and Site Traffic Assessment Standards and Requirements Manual, Version 1.0, Committee of Transport Officials (COTO) August 2012
- TMH 17 Volume 1, South African Trip Data Manual, Version 1.01, Committee of Transport Officials (COTO) September 2013.
- TRH 26, South African Road Classification and Access Management Manual, Version 1.0, Committee of Transport Officials (COTO) August 2012.
- Highway Capacity Manual, Transportation Research Board, National Research Council Washington D.C., 2010.
- Dube Trade Port, Environmental Impact Report: Traffic Study, Techso Smart Solutions, April 2007.
- Vaal Aerotropolis N1 Interchanges, Fatal Flaw Report, WSP Group Africa, January 2025.
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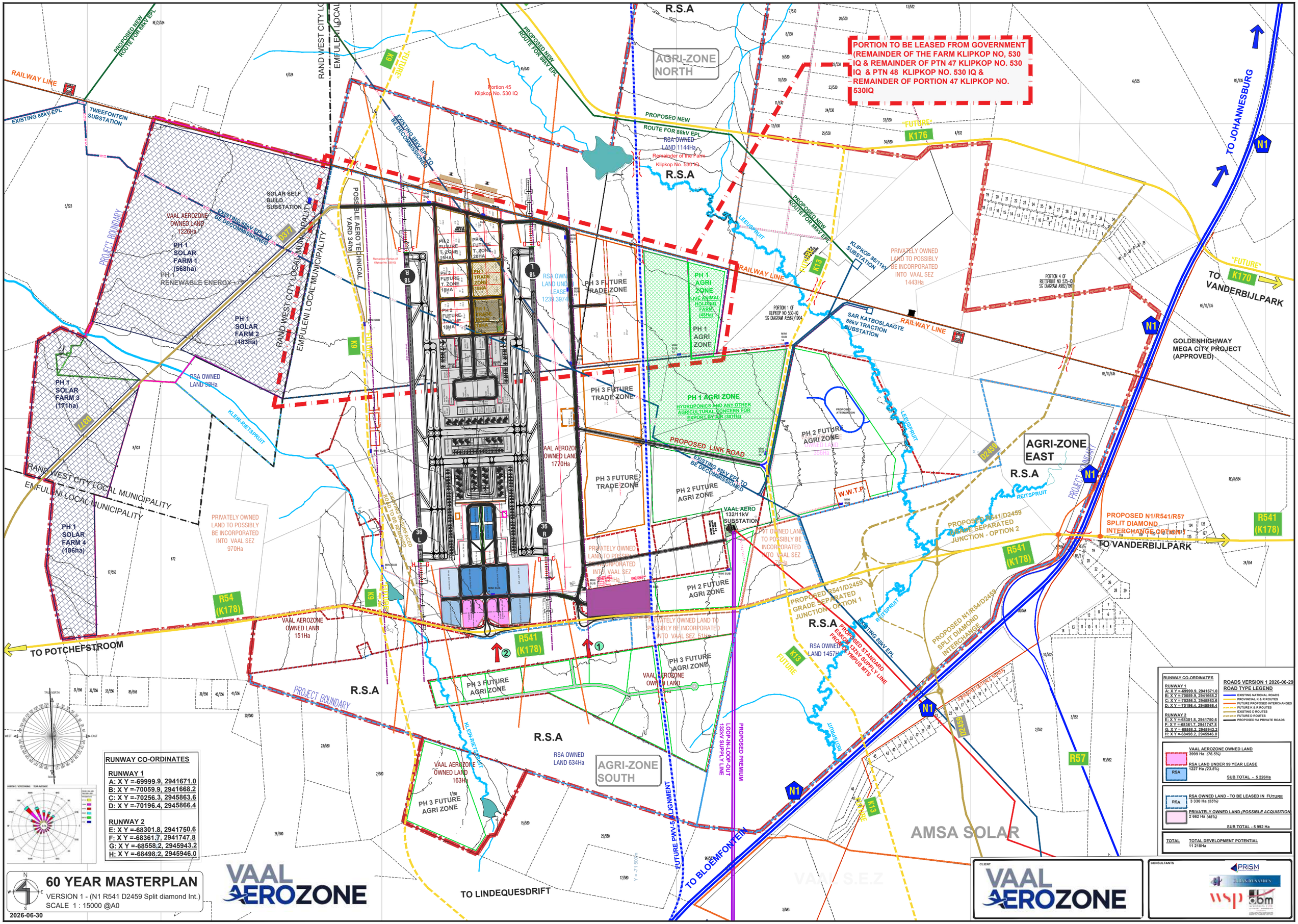
- Airport Company South Africa, accessed 24 January 2025, https://www.airports.co.za/airports/cape-town-international-airport/at-the-airport/parking-information
- Airport Company South Africa, accessed 24 January 2025, https://www.airports.co.za/airports/king-shaka-international-airport/at-the-airport/parking-information

APPENDICES

Appendix A – Masterplan


PORTION TO BE LEASED FROM GOVERNMENT (REMAINDER OF THE FARM KLIPKOP NO, 530 IQ & REMAINDER OF PTN 47 KLIPKOP NO. 530 IQ & PTN 48 KLIPKOP NO. 530 IQ & REMAINDER OF PORTION 47 KLIPKOP NO. 530IQ
AGRI-ZONE NORTH
AGRI-ZONE EAST
AGRI-ZONE SOUTH
R.S.A
RAILWAY LINE
PROPOSED NEW ROUTE FOR 88KV EPL
EXISTING 88kV EPL
TWEEFONTEIN SUBSTATION
SOLAR SELF BUILD SUBSTATION
VAAL AEROZONE OWNED LAND 1226Ha
PH 1 SOLAR FARM 1 (568ha)
PH 1 SOLAR FARM 2 (183ha)
PH 1 SOLAR FARM 3 (171ha)
PH 1 SOLAR FARM 4 (186ha)
PROJECT BOUNDARY
RAND WEST CITY LOCAL MUNICIPALITY
EMFULENI LOCAL MUNICIPALITY
POSSIBLE AERO TECHNICAL YARD 34ha
RSA OWNED LAND 98Ha
KLEIN-RIETSPRUIT
LEEUSPRUIT
REITSPRUIT
RSA OWNED LAND 1144Ha
Remainder of the Farm Klipkop No. 530 IQ
Portion 45 Klipkop No. 530 IQ
PH 3 FUTURE TRADE ZONE
PH 1 AGRI ZONE
PH 1 AGRI ZONE HYDROPONICS AND ANY OTHER AGRICULTURAL CONCERN FOR EXPORT BY AIR (307Ha)
PH 2 FUTURE AGRI ZONE
PROPOSED LINK ROAD
KLIPKOP 88/11kV SUBSTATION
SAR KATBOSLAAGTE 88kV TRACTION SUBSTATION
PRIVATELY OWNED LAND TO POSSIBLY BE INCORPORATED INTO VAAL SEZ 1443Ha
PRIVATELY OWNED LAND TO POSSIBLY BE INCORPORATED INTO VAAL SEZ 970Ha
VAAL AEROZONE OWNED LAND 1770Ha
VAAL AEROZONE OWNED LAND 151Ha
VAAL AEROZONE OWNED LAND 163Ha
VAAL AEROZONE OWNED LAND 3999 Ha (76.5%)
VAAL AERO 132/11kV SUBSTATION
W.W.T.P.
PROPOSED N1/R541/R57 SPLIT DIAMOND INTERCHANGE OPTION 2
PROPOSED R541/D2459 GRADE SEPARATED JUNCTION - OPTION 2
PROPOSED R541/D2459 GRADE SEPARATED JUNCTION - OPTION 1
PROPOSED N1/R541/D2459 SPLIT DIAMOND INTERCHANGE
PROPOSED STANDARD ESKOM 132kV SUPPLY LINE FROM KTMPUS MTS
RSA OWNED LAND 1457Ha
RSA OWNED LAND 634Ha
PROPOSED PREMIUM LOOP-IN-LOOP-OUT 132kV SUPPLY LINE
FUTURE PWV-5 ALIGNMENT
TO BLOEMFONTEIN
TO LINDEQUESDRIFT
TO POTCHEFSTROOM
TO VANDERBIJLPARK
TO JOHANNESBURG
GOLDENHIGHWAY MEGA CITY PROJECT (APPROVED)
AMSA SOLAR
VAAL S.E.Z
R54 (K178)
R541 (K178)
R57
N1
D2459
D377
K9
K13
K14
K176
K170
RUNWAY CO-ORDINATES
RUNWAY 1
A: X Y =-69999.9, 2941671.0
B: X Y =-70059.9, 2941668.2
C: X Y =-70256.3, 2945863.6
D: X Y =-70196.4, 2945866.4
RUNWAY 2
E: X Y =-68301.8, 2941750.6
F: X Y =-68361.7, 2941747.8
G: X Y =-68558.2, 2945943.2
H: X Y =-68498.2, 2945946.0
ROADS VERSION 1 2026-06-29
ROAD TYPE LEGEND
EXISTING NATIONAL ROADS
PROVINCIAL K & R ROUTES
FUTURE PROPOSED INTERCHANGES
FUTURE K & R ROUTES
EXISTING D ROUTES
FUTURE D ROUTES
PROPOSED VA PRIVATE ROADS
VAAL AEROZONE OWNED LAND 3999 Ha (76.5%)
RSA LAND UNDER 99 YEAR LEASE 1227 Ha (23.5%)
SUB TOTAL - 5 226Ha
RSA OWNED LAND - TO BE LEASED IN FUTURE 3 330 Ha (55%)
PRIVATELY OWNED LAND (POSSIBLE ACQUISITION 2 662 Ha (45%)
SUB TOTAL - 5 992 Ha
TOTAL DEVELOPMENT POTENTIAL 11 218Ha
60 YEAR MASTERPLAN
VERSION 1 - (N1 R541 D2459 Split diamond Int.)
SCALE 1 : 15000 @A0
2026-06-30
VAAL AEROZONE
CLIENT
CONSULTANTS
PRISM
MPUMALANGA MINES
wsp
dbm

Appendix B – Traffic survey data

LOCATION	KING SHAKA INTERNATIONAL AIRPORT	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	USHUKELA DR (M43) & 610134 ST				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-17H-05-22-C

OVERVIEW MAP & VIDEO FRAME

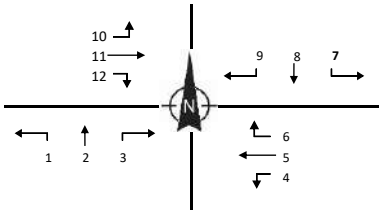
JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND
USHUKELA DR (M43)

NORTHERN APPROACH / SOUTHBOUND
UNKNOWN RD

SOUTHERN APPROACH / NORTHBOUND
610134 ST

EASTERN APPROACH / WESTBOUND
USHUKELA DR (M43)



TOTAL VEHICLES SUMMARY

	10	11	12
NIGHT	1	1	2
PM	262	455	446	798	174
MID	19	46	47	91	39
AM					
MORNING					

	9	8	7
NIGHT	1	1	1
PM	0	0	0
MID	3	1	0
AM	2	0	1
MORNING	3	0	0

	1	2	3
NIGHT	65	0	98
PM	116	0	169
MID	68	1	129
AM	51	0	207
MORNING	27	1	51

	6	5	4
NIGHT	0	347	84
PM	2	647	235
MID	0	382	136
AM	0	496	231
MORNING	0	66	54

LIGHT VEHICLES

	10	11	12
NIGHT	1	1	2
PM	240	406	394	740	146
MID	18	40	38	89	38
AM					
MORNING					

	9	8	7
NIGHT	1	1	1
PM	0	0	0
MID	3	1	0
AM	1	0	1
MORNING	2	0	0

	1	2	3
NIGHT	62	0	96
PM	112	0	158
MID	63	1	115
AM	47	0	185
MORNING	23	1	47

	6	5	4
NIGHT	0	307	71
PM	2	584	219
MID	0	341	116
AM	0	436	216
MORNING	0	58	54

MINI BUS TAXI

	10	11	12
NIGHT	0	0	0
PM	0	34	16	54	16
MID	0	4	1	0	1
AM					
MORNING					

	9	8	7
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	1	0	0
MORNING	0	0	0

	1	2	3
NIGHT	3	0	2
PM	1	0	7
MID	4	0	5
AM	4	0	10
MORNING	4	0	2

	6	5	4
NIGHT	0	27	5
PM	0	43	7
MID	0	17	5
AM	0	36	6
MORNING	0	4	0

BUSSES

	10	11	12
NIGHT	0	0	0
PM	0	0	4	3	1
MID	0	0	0	0	0
AM					
MORNING					

	9	8	7
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	6	5	4
NIGHT	0	2	0
PM	0	3	1
MID	0	2	0
AM	0	6	0
MORNING	0	0	0

HEAVY VEHICLES

	10	11	12
NIGHT	0	0	1
PM	6	24	41	20	11
MID	0	4	41	1	0
AM					
MORNING					

	9	8	7
NIGHT	0	0	0
PM	1	0	0
MID	0	0	0
AM	0	0	0
MORNING	1	0	0

	1	2	3
NIGHT	0	0	0
PM	6	0	10
MID	5	0	11
AM	2	0	15
MORNING	0	0	2

	6	5	4
NIGHT	0	14	8
PM	0	14	17
MID	0	29	13
AM	0	21	13
MORNING	0	4	0

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	USHUKELA DR (M43) & 610134 ST		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P1	DATA: J.A.V	TYPE: 4W-17H-05-22-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	8	-	7	10	12	-	-	-	-	1	18	7	63	63
05:15	05:30	5	-	17	11	11	-	-	-	1	-	47	4	96	159
05:30	05:45	6	-	13	12	24	-	-	-	1	-	46	16	118	277
05:45	06:00	8	1	14	21	19	-	-	-	1	1	63	12	140	417
06:00	06:15	22	-	25	24	30	-	-	-	-	1	102	8	212	
06:15	06:30	14	-	37	30	61	-	-	-	1	-	153	7	303	
06:30	06:45	16	-	54	39	67	-	1	-	2	1	188	15	383	
06:45	07:00	15	-	43	34	106	-	-	-	1	1	217	11	428	1326
07:00	07:15	8	-	49	53	114	-	1	-	2	1	208	23	459	1573
07:15	07:30	13	-	59	56	122	-	-	-	-	1	241	20	512	1782
07:30	07:45	11	-	53	58	121	-	-	-	-	-	197	15	455	1854
07:45	08:00	19	-	46	64	139	-	-	-	-	1	152	33	454	1880
08:00	08:15	7	-	32	41	105	-	-	-	-	1	130	12	328	1749
08:15	08:30	13	-	24	37	89	-	-	-	1	-	99	10	273	1510
08:30	08:45	8	-	27	35	77	1	-	-	-	1	93	4	246	1301
08:45	09:00	13	-	33	22	79	-	-	-	-	-	98	9	254	1101
09:00	09:15	6	-	24	21	72	1	1	-	-	1	78	10	214	
09:15	09:30	12	-	30	28	97	-	-	-	-	-	91	5	263	
09:30	09:45	18	-	40	10	77	-	1	-	-	-	88	11	245	
09:45	10:00	4	-	32	24	74	-	-	-	-	-	100	6	240	962
10:00	10:15	16	-	26	20	98	-	1	-	-	-	83	5	249	997
10:15	10:30	11	-	16	20	80	-	-	-	-	-	103	14	244	978
10:30	10:45	16	-	26	32	77	-	-	-	-	-	99	2	252	985
10:45	11:00	8	-	28	21	96	-	-	-	-	-	87	10	250	995
11:00	11:15	11	-	24	20	91	-	-	-	-	-	98	9	253	999
11:15	11:30	10	-	30	31	108	-	-	-	1	-	106	10	296	1051
11:30	11:45	15	-	29	16	90	-	-	1	-	-	96	10	257	1056
11:45	12:00	16	-	21	27	84	-	2	-	2	-	84	13	249	1055
12:00	12:15	15	-	34	25	97	1	-	-	1	-	70	13	256	1058
12:15	12:30	14	-	27	26	110	-	1	-	2	2	112	13	307	1069
12:30	12:45	10	-	29	26	82	-	-	-	2	1	114	16	280	1092
12:45	13:00	17	-	30	24	93	-	-	-	-	1	85	20	270	1113
13:00	13:15	19	-	27	24	85	-	-	1	1	1	100	17	275	1132
13:15	13:30	23	-	28	33	94	-	-	-	1	-	100	9	288	1113
13:30	13:45	19	1	36	27	98	-	-	-	-	-	91	9	281	1114
13:45	14:00	8	-	43	33	84	-	-	1	1	1	109	17	297	1141
14:00	14:15	17	-	24	30	97	-	-	1	-	-	100	9	278	1144
14:15	14:30	20	-	38	28	76	-	-	-	1	-	111	10	284	1140
14:30	14:45	13	-	40	36	106	-	-	-	1	2	102	13	313	1172
14:45	15:00	18	1	27	42	103	-	-	-	1	1	133	15	341	1216
15:00	15:15	22	-	41	30	115	-	-	-	2	-	89	6	305	
15:15	15:30	20	-	44	29	99	-	-	-	-	1	94	7	294	
15:30	15:45	14	-	35	36	114	-	-	-	3	3	112	12	329	
15:45	16:00	10	1	33	43	94	-	-	-	1	-	113	13	308	1236
16:00	16:15	27	-	41	35	124	-	-	-	-	-	108	5	340	1271
16:15	16:30	23	1	55	53	126	-	2	-	-	2	104	12	378	1355
16:30	16:45	32	-	47	54	160	-	-	-	-	-	110	3	406	1432
16:45	17:00	28	-	55	62	166	-	-	-	-	-	135	11	457	1581
17:00	17:15	33	-	33	68	153	-	-	-	-	-	111	12	410	1651
17:15	17:30	23	-	34	51	168	2	-	-	-	1	99	20	398	1671
17:30	17:45	22	-	33	50	122	-	-	-	-	-	93	13	333	1598
17:45	18:00	19	-	36	47	140	1	-	1	-	1	73	18	336	1477
18:00	18:15	32	-	35	23	116	-	1	-	1	-	78	4	290	
18:15	18:30	18	-	23	23	89	-	-	-	-	-	63	5	221	
18:30	18:45	8	-	21	22	86	-	-	-	-	-	62	1	200	
18:45	19:00	7	-	19	16	56	-	-	1	-	1	59	9	168	879
19:00	19:15	14	-	21	24	55	-	-	-	-	1	50	8	173	762
19:15	19:30	9	-	18	30	69	-	-	-	1	-	37	4	168	709
19:30	19:45	12	-	13	7	44	-	-	-	-	-	34	5	115	624
19:45	20:00	6	-	12	9	24	-	-	-	-	-	36	5	92	548
20:00	20:15	6	-	13	9	37	-	-	-	-	-	19	3	87	462
20:15	20:30	11	-	7	5	24	-	-	-	-	-	17	4	68	362
20:30	20:45	5	-	10	9	28	-	-	1	-	-	24	2	79	326
20:45	21:00	9	-	8	2	25	-	-	-	-	-	14	5	63	297
21:00	21:15	10	-	5	9	14	-	-	-	-	-	18	3	59	269
21:15	21:30	3	-	4	3	19	-	-	-	-	-	24	4	57	258
21:30	21:45	5	-	3	5	23	-	-	-	-	-	30	8	74	253
21:45	22:00	6	-	6	1	13	-	-	-	-	-	17	1	44	234
TOTAL		956	5	1 947	1 926	5 648	6	11	7	32	30	6 215	675	17 458	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	27	1	51	54	66	-	-	-	3	2	174	39	417	MORNING PEAK
05:00	06:00	0.84	0.25	0.75	0.64	0.69	-	-	-	0.75	0.50	0.69	0.61	0.74	MORNING PHF
07:00	08:00	51	-	207	231	496	-	1	-	2	3	798	91	1 880	AM PEAK
07:00	08:00	0.67	-	0.88	0.90	0.89	-	0.25	-	0.25	0.75	0.83	0.69	0.92	AM PHF
14:00	15:00	68	1	129	136	382	-	-	1	3	3	446	47	1 216	MID PEAK
14:00	15:00	0.85	0.25	0.81	0.81	0.90	-	-	0.25	0.75	0.38	0.84	0.78	0.89	MID PHF
16:30	17:30	116	-	169	235	647	2	-	-	-	1	455	46	1 671	PM PEAK
16:30	17:30	0.88	-	0.77	0.86	0.96	0.25	-	-	-	0.25	0.84	0.57	0.91	PM PHF
18:00	19:00	65	-	98	84	347	-	1	1	1	1	262	19	879	NIGHT PEAK
18:00	19:00	0.51	-	0.70	0.91	0.75	-	-	0.25	0.25	0.25	0.84	0.53	0.76	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	27	1	51	54	66	-	-	-	3	2	174	39	417	MORNING TOTAL
06:00	09:00	159	-	482	493	1 110	1	2	-	7	8	1 878	167	4 307	AM TOTAL
09:00	15:00	336	2	709	624	2 169	2	6	4	14	10	2 340	266	6 482	MID TOTAL
15:00	18:00	273	2	487	558	1 581	3	2	1	6	8	1 241	132	4 294	PM TOTAL
18:00	22:00	161	-	218	197	722	-	1	2	2	2	582	71	1 958	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	USHUKELA DR (M43) & 610134 ST				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-17H-05-22-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	7	-	7	10	11	-	-	-	-	1	16	7	59	59
05:15	05:30	4	-	15	11	10	-	-	-	1	-	35	3	79	138
05:30	05:45	5	-	13	12	21	-	-	-	1	-	39	16	107	245
05:45	06:00	7	1	12	21	16	-	-	-	-	1	56	12	126	371
06:00	06:15	20	-	21	23	26	-	-	-	-	1	91	8	190	
06:15	06:30	11	-	34	28	53	-	-	-	1	-	142	7	276	
06:30	06:45	15	-	50	38	59	-	1	-	2	-	162	15	342	
06:45	07:00	13	-	36	32	92	-	-	-	1	1	196	11	382	1190
07:00	07:15	7	-	43	52	97	-	1	-	1	1	189	23	414	1414
07:15	07:30	13	-	56	54	109	-	-	-	-	1	222	20	475	1613
07:30	07:45	10	-	47	53	109	-	-	-	-	-	188	14	421	1692
07:45	08:00	17	-	39	57	121	-	-	-	-	-	141	32	407	1717
08:00	08:15	6	-	28	37	97	-	-	-	-	1	119	12	300	1603
08:15	08:30	13	-	22	35	75	-	-	-	1	-	87	10	243	1371
08:30	08:45	8	-	25	32	63	1	-	-	-	1	82	4	216	1166
08:45	09:00	11	-	31	21	74	-	-	-	-	-	82	9	228	987
09:00	09:15	5	-	20	19	67	1	1	-	-	1	66	9	189	
09:15	09:30	10	-	25	27	89	-	-	-	-	-	81	5	237	
09:30	09:45	14	-	33	9	70	-	1	-	-	-	74	10	211	
09:45	10:00	4	-	23	24	63	-	-	-	-	-	88	6	208	845
10:00	10:15	16	-	21	16	83	-	1	-	-	-	70	5	212	868
10:15	10:30	10	-	15	17	70	-	-	-	-	-	98	12	222	853
10:30	10:45	14	-	22	23	70	-	-	-	-	-	88	2	219	861
10:45	11:00	8	-	25	17	85	-	-	-	-	-	82	9	226	879
11:00	11:15	8	-	22	17	80	-	-	-	-	-	88	9	224	891
11:15	11:30	9	-	24	27	94	-	-	-	1	-	88	10	253	922
11:30	11:45	14	-	24	12	77	-	-	1	-	-	84	10	222	925
11:45	12:00	13	-	19	23	76	-	2	-	2	-	68	13	216	915
12:00	12:15	13	-	31	20	83	1	-	-	1	-	64	11	224	915
12:15	12:30	14	-	26	25	95	-	1	-	2	2	94	11	270	932
12:30	12:45	8	-	27	21	69	-	-	-	2	1	104	13	245	955
12:45	13:00	16	-	29	21	86	-	-	-	-	1	75	18	246	985
13:00	13:15	19	-	23	19	69	-	-	1	1	1	90	16	239	1000
13:15	13:30	22	-	23	29	89	-	-	-	1	-	85	7	256	986
13:30	13:45	17	1	32	23	79	-	-	-	-	-	76	9	237	978
13:45	14:00	7	-	39	31	77	-	-	1	-	-	97	15	267	999
14:00	14:15	16	-	21	26	84	-	-	1	-	-	88	7	243	1003
14:15	14:30	19	-	35	25	68	-	-	-	1	-	96	9	253	1000
14:30	14:45	12	-	39	29	97	-	-	-	1	1	89	12	280	1043
14:45	15:00	16	1	20	36	92	-	-	-	1	1	121	10	298	1074
15:00	15:15	17	-	38	22	108	-	-	-	2	-	78	6	271	
15:15	15:30	19	-	37	25	84	-	-	-	-	1	78	5	249	
15:30	15:45	14	-	30	32	100	-	-	-	2	3	100	11	292	
15:45	16:00	10	1	31	36	86	-	-	-	1	-	102	11	278	1090
16:00	16:15	25	-	38	34	106	-	-	-	-	-	93	5	301	1120
16:15	16:30	22	1	52	51	115	-	2	-	-	1	88	9	341	1212
16:30	16:45	30	-	42	50	143	-	-	-	-	-	98	3	366	1286
16:45	17:00	27	-	53	59	154	-	-	-	-	-	121	9	423	1431
17:00	17:15	33	-	31	61	133	-	-	-	-	-	102	12	372	1502
17:15	17:30	22	-	32	49	154	2	-	-	-	1	85	16	361	1522
17:30	17:45	22	-	31	46	109	-	-	-	-	-	83	11	302	1458
17:45	18:00	19	-	35	43	125	1	-	1	-	1	58	15	298	1333
18:00	18:15	30	-	34	19	105	-	1	-	1	-	73	4	267	
18:15	18:30	17	-	23	18	77	-	-	-	-	-	58	5	198	
18:30	18:45	8	-	21	18	71	-	-	-	-	-	53	1	172	
18:45	19:00	7	-	18	16	54	-	-	1	-	1	56	8	161	798
19:00	19:15	14	-	20	24	50	-	-	-	-	1	45	8	162	693
19:15	19:30	9	-	18	30	59	-	-	-	1	-	35	4	156	651
19:30	19:45	10	-	12	7	42	-	-	-	-	-	29	5	105	584
19:45	20:00	6	-	12	9	20	-	-	-	-	-	34	4	85	508
20:00	20:15	6	-	13	9	35	-	-	-	-	-	19	2	84	430
20:15	20:30	11	-	7	5	22	-	-	-	-	-	17	3	65	339
20:30	20:45	5	-	10	9	25	-	-	1	-	-	23	2	75	309
20:45	21:00	9	-	8	2	24	-	-	-	-	-	14	5	62	286
21:00	21:15	10	-	4	6	13	-	-	-	-	-	17	3	53	255
21:15	21:30	3	-	4	3	19	-	-	-	-	-	21	4	54	244
21:30	21:45	2	-	2	5	21	-	-	-	-	-	25	7	62	231
21:45	22:00	5	-	6	1	10	-	-	-	-	-	15	1	38	207
TOTAL		883	5	1 759	1 741	5 009	6	11	7	28	25	5 521	620	15 615	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	23	1	47	54	58	-	-	-	2	2	146	38	371	MORNING PEAK
05:00	06:00	0.82	0.25	0.78	0.64	0.69	-	-	-	0.50	0.50	0.65	0.59	0.74	MORNING PHF
07:00	08:00	47	-	185	216	436	-	1	-	1	2	740	89	1 717	AM PEAK
07:00	08:00	0.69	-	0.83	0.95	0.90	-	0.25	-	0.25	0.50	0.83	0.70	0.90	AM PHF
14:00	15:00	63	1	115	116	341	-	-	1	3	2	394	38	1 074	MID PEAK
14:00	15:00	0.83	0.25	0.74	0.81	0.88	-	-	0.25	0.75	0.50	0.81	0.79	0.90	MID PHF
16:30	17:30	112	-	158	219	584	2	-	-	-	1	406	40	1 522	PM PEAK
16:30	17:30	0.85	-	0.75	0.90	0.95	0.25	-	-	-	0.25	0.84	0.62	0.90	PM PHF
18:00	19:00	62	-	96	71	307	-	1	1	1	1	240	18	798	NIGHT PEAK
18:00	19:00	0.52	-	0.71	0.93	0.73	-	-	0.25	0.25	0.25	0.82	0.56	0.75	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	23	1	47	54	58	-	-	-	2	2	146	38	371	MORNING TOTAL
06:00	09:00	144	-	432	462	975	1	2	-	6	6	1 701	165	3 894	AM TOTAL
09:00	15:00	304	2	618	536	1 912	2	6	4	13	8	2 054	238	5 697	MID TOTAL
15:00	18:00	260	2	450	508	1 417	3	2	1	5	7	1 086	113	3 854	PM TOTAL
18:00	22:00	152	-	212	181	647	-	1	2	2	2	534	66	1 799	NIGHT TOTAL

LOCATION	NG SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	USHUKELA DR (M43) & 610134 ST		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P1	DATA: J.A.V	TYPE: 4W-17H-05-22-C

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	1	-	-	-	-	-	-	-	-	-	1	-	2	2
05:15	05:30	1	-	1	-	1	-	-	-	-	-	4	1	8	10
05:30	05:45	1	-	-	-	1	-	-	-	-	-	5	-	7	17
05:45	06:00	1	-	1	-	2	-	-	-	-	-	6	-	10	27
06:00	06:15	2	-	1	-	3	-	-	-	-	-	11	-	17	
06:15	06:30	1	-	1	2	5	-	-	-	-	-	9	-	18	
06:30	06:45	1	-	4	1	6	-	-	-	-	-	11	-	23	
06:45	07:00	2	-	1	2	9	-	-	-	-	-	14	-	28	86
07:00	07:15	1	-	3	1	10	-	-	-	1	-	16	-	32	101
07:15	07:30	-	-	2	2	11	-	-	-	-	-	13	-	28	111
07:30	07:45	1	-	2	1	8	-	-	-	-	-	6	-	18	106
07:45	08:00	1	-	1	3	11	-	-	-	-	-	7	1	24	102
08:00	08:15	-	-	1	1	3	-	-	-	-	-	6	-	11	81
08:15	08:30	-	-	-	-	8	-	-	-	-	-	4	-	12	65
08:30	08:45	-	-	2	-	9	-	-	-	-	-	5	-	16	63
08:45	09:00	2	-	1	-	2	-	-	-	-	-	6	-	11	50
09:00	09:15	-	-	1	2	3	-	-	-	-	-	5	-	11	
09:15	09:30	-	-	-	-	4	-	-	-	-	-	4	-	8	
09:30	09:45	1	-	2	1	4	-	-	-	-	-	4	-	12	
09:45	10:00	-	-	-	-	2	-	-	-	-	-	3	-	5	36
10:00	10:15	-	-	1	-	5	-	-	-	-	-	6	-	12	37
10:15	10:30	1	-	-	-	5	-	-	-	-	-	4	1	11	40
10:30	10:45	-	-	1	2	1	-	-	-	-	-	6	-	10	38
10:45	11:00	-	-	-	-	4	-	-	-	-	-	3	1	8	41
11:00	11:15	1	-	1	-	1	-	-	-	-	-	2	-	5	34
11:15	11:30	-	-	1	1	7	-	-	-	-	-	5	-	14	37
11:30	11:45	-	-	1	1	5	-	-	-	-	-	3	-	10	37
11:45	12:00	2	-	1	-	3	-	-	-	-	-	3	-	9	38
12:00	12:15	1	-	1	2	5	-	-	-	-	-	2	1	12	45
12:15	12:30	-	-	-	-	7	-	-	-	-	-	6	1	14	45
12:30	12:45	-	-	-	1	2	-	-	-	-	-	3	1	7	42
12:45	13:00	-	-	-	-	3	-	-	-	-	-	3	1	7	40
13:00	13:15	-	-	-	2	4	-	-	-	-	-	2	-	8	36
13:15	13:30	1	-	1	2	3	-	-	-	-	-	5	1	13	35
13:30	13:45	2	-	2	1	7	-	-	-	-	-	5	-	17	45
13:45	14:00	1	-	2	-	3	-	-	-	-	-	4	-	10	48
14:00	14:15	-	-	-	1	2	-	-	-	-	-	4	1	8	48
14:15	14:30	-	-	-	-	5	-	-	-	-	-	5	-	10	45
14:30	14:45	-	-	1	3	5	-	-	-	-	1	4	1	15	43
14:45	15:00	-	-	2	1	5	-	-	-	-	-	4	3	15	48
15:00	15:15	-	-	1	1	6	-	-	-	-	-	5	-	13	
15:15	15:30	-	-	3	1	8	-	-	-	-	-	8	-	20	
15:30	15:45	-	-	2	2	9	-	-	-	-	-	7	-	20	
15:45	16:00	-	-	1	2	7	-	-	-	-	-	4	1	15	68
16:00	16:15	1	-	2	1	6	-	-	-	-	-	8	-	18	73
16:15	16:30	1	-	1	1	5	-	-	-	-	-	9	2	19	72
16:30	16:45	1	-	3	3	7	-	-	-	-	-	6	-	20	72
16:45	17:00	-	-	1	1	8	-	-	-	-	-	8	1	19	76
17:00	17:15	-	-	2	2	13	-	-	-	-	-	8	-	25	83
17:15	17:30	1	-	2	1	11	-	-	-	-	-	9	3	27	91
17:30	17:45	-	-	2	1	9	-	-	-	-	-	7	1	20	91
17:45	18:00	-	-	1	3	10	-	-	-	-	-	10	-	24	96
18:00	18:15	2	-	1	1	8	-	-	-	-	-	5	-	17	
18:15	18:30	1	-	-	2	7	-	-	-	-	-	2	-	12	
18:30	18:45	-	-	-	2	11	-	-	-	-	-	6	-	19	
18:45	19:00	-	-	1	-	1	-	-	-	-	-	3	1	6	54
19:00	19:15	-	-	-	-	4	-	-	-	-	-	1	-	5	42
19:15	19:30	-	-	-	-	7	-	-	-	-	-	1	-	8	38
19:30	19:45	1	-	-	-	2	-	-	-	-	-	1	-	4	23
19:45	20:00	-	-	-	-	1	-	-	-	-	-	-	-	1	18
20:00	20:15	-	-	-	-	1	-	-	-	-	-	-	-	1	14
20:15	20:30	-	-	-	-	-	-	-	-	-	-	-	1	1	7
20:30	20:45	-	-	-	-	-	-	-	-	-	-	-	-	-	3
20:45	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
21:00	21:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
21:15	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:30	21:45	1	-	-	-	-	-	-	-	-	-	3	1	5	5
21:45	22:00	-	-	-	-	-	-	-	-	-	-	1	-	1	6
TOTAL		34	-	62	57	325	-	-	-	1	1	331	25	836	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	4	-	2	-	4	-	-	-	-	-	16	1	27	MORNING PEAK
05:00	06:00	1.00	-	0.50	-	0.50	-	-	-	-	-	0.67	0.25	0.68	MORNING PHF
06:30	07:30	4	-	10	6	36	-	-	-	1	-	54	-	111	AM PEAK
06:30	07:30	0.50	-	0.62	0.75	0.82	-	-	-	0.25	-	0.84	-	0.87	AM PHF
13:00	14:00	4	-	5	5	17	-	-	-	-	-	16	1	48	MID PEAK
13:00	14:00	0.50	-	0.62	0.62	0.61	-	-	-	-	-	0.80	0.25	0.71	MID PHF
17:00	18:00	1	-	7	7	43	-	-	-	-	-	34	4	96	PM PEAK
17:00	18:00	0.25	-	0.88	0.58	0.83	-	-	-	-	-	0.85	0.33	0.89	PM PHF
18:00	19:00	3	-	2	5	27	-	-	-	-	-	16	1	54	NIGHT PEAK
18:00	19:00	0.38	-	0.50	0.62	0.61	-	-	-	-	-	0.67	0.25	0.71	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	4	-	2	-	4	-	-	-	-	-	16	1	27	MORNING TOTAL
06:00	09:00	11	-	19	13	85	-	-	-	1	-	108	1	238	AM TOTAL
09:00	15:00	10	-	18	20	95	-	-	-	-	1	95	12	251	MID TOTAL
15:00	18:00	4	-	21	19	99	-	-	-	-	-	89	8	240	PM TOTAL
18:00	22:00	5	-	2	5	42	-	-	-	-	-	23	3	80	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	USHUKELA DR (M43) & 610134 ST		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P1	DATA: J.A.V	TYPE: 4W-17H-05-22-C

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:15	05:30	-	-	-	-	-	-	-	-	-	-	1	-	1	1
05:30	05:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
05:45	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	1	-	-	-	-	-	-	-	1	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	1	-	1	
06:45	07:00	-	-	-	-	2	-	-	-	-	-	-	-	2	4
07:00	07:15	-	-	-	-	3	-	-	-	-	-	2	-	5	9
07:15	07:30	-	-	-	-	-	-	-	-	-	-	1	-	1	9
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	8
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	6
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:15	08:30	-	-	-	-	1	-	-	-	-	-	-	-	1	1
08:30	08:45	-	-	-	-	1	-	-	-	-	-	-	-	1	2
08:45	09:00	-	-	-	-	-	-	-	-	-	-	1	-	1	3
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	1	-	1	
09:30	09:45	-	-	-	-	1	-	-	-	-	-	-	-	1	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	1	-	-	-	-	-	-	-	1	1
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
11:30	11:45	-	-	-	-	-	-	-	-	-	-	1	-	1	2
11:45	12:00	-	-	-	-	-	-	-	-	-	-	1	-	1	3
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
12:45	13:00	-	-	-	-	1	-	-	-	-	-	-	-	1	1
13:00	13:15	-	-	-	-	-	-	-	-	-	-	2	-	2	3
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
13:30	13:45	-	-	-	-	-	-	-	-	-	-	1	-	1	4
13:45	14:00	-	-	-	-	1	-	-	-	-	-	-	-	1	4
14:00	14:15	-	-	-	-	1	-	-	-	-	-	1	-	2	4
14:15	14:30	-	-	-	-	-	-	-	-	-	-	2	-	2	6
14:30	14:45	-	-	-	-	1	-	-	-	-	-	-	-	1	6
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	5
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	1	-	1	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	1	-	1	2
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
16:15	16:30	-	-	-	-	2	-	-	-	-	-	-	-	2	3
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	3
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
17:00	17:15	-	-	-	1	1	-	-	-	-	-	-	-	2	4
17:15	17:30	-	-	-	-	-	-	-	-	-	-	1	-	1	3
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	3
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
18:00	18:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
18:15	18:30	-	-	-	-	1	-	-	-	-	-	-	-	1	
18:30	18:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
18:45	19:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
19:00	19:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
19:15	19:30	-	-	-	-	1	-	-	-	-	-	-	-	1	1
19:30	19:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
19:45	20:00	-	-	-	-	1	-	-	-	-	-	-	-	1	2
20:00	20:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
20:15	20:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
20:30	20:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
20:45	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:00	21:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:15	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:30	21:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:45	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		-	-	-	1	20	-	-	-	-	-	18	-	39	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	-	-	-	-	-	-	1	-	1	MORNING PEAK
05:00	06:00	-	-	-	-	-	-	-	-	-	-	0.25	-	0.25	MORNING PHF
06:15	07:15	-	-	-	-	6	-	-	-	-	-	3	-	9	AM PEAK
06:15	07:15	-	-	-	-	0.50	-	-	-	-	-	0.38	-	0.45	AM PHF
13:30	14:30	-	-	-	-	2	-	-	-	-	-	4	-	6	MID PEAK
13:30	14:30	-	-	-	-	0.50	-	-	-	-	-	0.50	-	0.75	MID PHF
16:15	17:15	-	-	-	1	3	-	-	-	-	-	-	-	4	PM PEAK
16:15	17:15	-	-	-	0.25	0.38	-	-	-	-	-	-	-	0.50	PM PHF
19:00	20:00	-	-	-	-	2	-	-	-	-	-	-	-	2	NIGHT PEAK
19:00	20:00	-	-	-	-	0.50	-	-	-	-	-	-	-	0.50	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	-	-	-	-	-	-	1	-	1	MORNING TOTAL
06:00	09:00	-	-	-	-	8	-	-	-	-	-	5	-	13	AM TOTAL
09:00	15:00	-	-	-	-	6	-	-	-	-	-	9	-	15	MID TOTAL
15:00	18:00	-	-	-	1	3	-	-	-	-	-	3	-	7	PM TOTAL
18:00	22:00	-	-	-	-	3	-	-	-	-	-	-	-	3	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	USHUKELA DR (M43) & 610134 ST		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P1	DATA: J.A.V	TYPE: 4W-17H-05-22-C

unitraf

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	1	-	-	-	-	-	1	-	2	2
05:15	05:30	-	-	1	-	-	-	-	-	-	-	7	-	8	10
05:30	05:45	-	-	-	-	2	-	-	-	-	-	2	-	4	14
05:45	06:00	-	-	1	-	1	-	-	-	1	-	1	-	4	18
06:00	06:15	-	-	3	1	1	-	-	-	-	-	-	-	5	
06:15	06:30	2	-	2	-	2	-	-	-	-	-	2	-	8	
06:30	06:45	-	-	-	-	2	-	-	-	-	1	14	-	17	
06:45	07:00	-	-	6	-	3	-	-	-	-	-	7	-	16	46
07:00	07:15	-	-	3	-	4	-	-	-	-	-	1	-	8	49
07:15	07:30	-	-	1	-	2	-	-	-	-	-	5	-	8	49
07:30	07:45	-	-	4	4	4	-	-	-	-	-	3	1	16	48
07:45	08:00	1	-	6	4	7	-	-	-	-	1	4	-	23	55
08:00	08:15	1	-	3	3	5	-	-	-	-	-	5	-	17	64
08:15	08:30	-	-	2	2	5	-	-	-	-	-	8	-	17	73
08:30	08:45	-	-	-	3	4	-	-	-	-	-	6	-	13	70
08:45	09:00	-	-	1	1	3	-	-	-	-	-	9	-	14	61
09:00	09:15	1	-	3	-	2	-	-	-	-	-	7	1	14	
09:15	09:30	2	-	5	1	4	-	-	-	-	-	5	-	17	
09:30	09:45	3	-	5	-	2	-	-	-	-	-	10	1	21	
09:45	10:00	-	-	9	-	9	-	-	-	-	-	9	-	27	79
10:00	10:15	-	-	4	4	10	-	-	-	-	-	7	-	25	90
10:15	10:30	-	-	1	3	5	-	-	-	-	-	1	1	11	84
10:30	10:45	2	-	3	7	6	-	-	-	-	-	5	-	23	86
10:45	11:00	-	-	3	4	7	-	-	-	-	-	2	-	16	75
11:00	11:15	2	-	1	3	9	-	-	-	-	-	8	-	23	73
11:15	11:30	1	-	5	3	7	-	-	-	-	-	13	-	29	91
11:30	11:45	1	-	4	3	8	-	-	-	-	-	8	-	24	92
11:45	12:00	1	-	1	4	5	-	-	-	-	-	12	-	23	99
12:00	12:15	1	-	2	3	9	-	-	-	-	-	4	1	20	96
12:15	12:30	-	-	1	1	8	-	-	-	-	-	12	1	23	90
12:30	12:45	2	-	2	4	11	-	-	-	-	-	7	2	28	94
12:45	13:00	1	-	1	3	3	-	-	-	-	-	7	1	16	87
13:00	13:15	-	-	4	3	12	-	-	-	-	-	6	1	26	93
13:15	13:30	-	-	4	2	2	-	-	-	-	-	10	1	19	89
13:30	13:45	-	-	2	3	12	-	-	-	-	-	9	-	26	87
13:45	14:00	-	-	2	2	3	-	-	-	1	1	8	2	19	90
14:00	14:15	1	-	3	3	10	-	-	-	-	-	7	1	25	89
14:15	14:30	1	-	3	3	3	-	-	-	-	-	8	1	19	89
14:30	14:45	1	-	-	4	3	-	-	-	-	-	9	-	17	80
14:45	15:00	2	-	5	5	6	-	-	-	-	-	8	2	28	89
15:00	15:15	5	-	2	7	1	-	-	-	-	-	6	-	21	
15:15	15:30	1	-	4	3	7	-	-	-	-	-	7	2	24	
15:30	15:45	-	-	3	2	5	-	-	-	1	-	5	1	17	
15:45	16:00	-	-	1	5	1	-	-	-	-	-	6	1	14	76
16:00	16:15	1	-	1	-	12	-	-	-	-	-	7	-	21	76
16:15	16:30	-	-	2	1	4	-	-	-	-	1	7	1	16	68
16:30	16:45	1	-	2	1	10	-	-	-	-	-	6	-	20	71
16:45	17:00	1	-	1	2	4	-	-	-	-	-	6	1	15	72
17:00	17:15	-	-	-	4	6	-	-	-	-	-	1	-	11	62
17:15	17:30	-	-	-	1	3	-	-	-	-	-	4	1	9	55
17:30	17:45	-	-	-	3	4	-	-	-	-	-	3	1	11	46
17:45	18:00	-	-	-	1	5	-	-	-	-	-	5	3	14	45
18:00	18:15	-	-	-	3	3	-	-	-	-	-	-	-	6	
18:15	18:30	-	-	-	3	4	-	-	-	-	-	3	-	10	
18:30	18:45	-	-	-	2	4	-	-	-	-	-	3	-	9	
18:45	19:00	-	-	-	-	1	-	-	-	-	-	-	-	1	26
19:00	19:15	-	-	1	-	1	-	-	-	-	-	4	-	6	26
19:15	19:30	-	-	-	-	2	-	-	-	-	-	1	-	3	19
19:30	19:45	1	-	1	-	-	-	-	-	-	-	4	-	6	16
19:45	20:00	-	-	-	-	2	-	-	-	-	-	2	1	5	20
20:00	20:15	-	-	-	-	1	-	-	-	-	-	-	1	2	16
20:15	20:30	-	-	-	-	2	-	-	-	-	-	-	-	2	15
20:30	20:45	-	-	-	-	3	-	-	-	-	-	1	-	4	13
20:45	21:00	-	-	-	-	1	-	-	-	-	-	-	-	1	9
21:00	21:15	-	-	1	3	1	-	-	-	-	-	1	-	6	13
21:15	21:30	-	-	-	-	-	-	-	-	-	-	3	-	3	14
21:30	21:45	2	-	1	-	2	-	-	-	-	-	2	-	7	17
21:45	22:00	1	-	-	-	3	-	-	-	-	-	1	-	5	21
TOTAL		39	-	126	127	294	-	-	-	3	4	345	30	968	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	2	-	4	-	-	-	1	-	11	-	18	MORNING PEAK
05:00	06:00	-	-	0.50	-	0.50	-	-	-	0.25	-	0.39	-	0.56	MORNING PHF
07:30	08:30	2	-	15	13	21	-	-	-	-	1	20	1	73	AM PEAK
07:30	08:30	0.50	-	0.62	0.81	0.75	-	-	-	-	0.25	0.62	0.25	0.79	AM PHF
11:00	12:00	5	-	11	13	29	-	-	-	-	-	41	-	99	MID PEAK
11:00	12:00	0.62	-	0.55	0.81	0.81	-	-	-	-	-	0.79	-	0.85	MID PHF
15:00	16:00	6	-	10	17	14	-	-	-	1	-	24	4	76	PM PEAK
15:00	16:00	0.30	-	0.62	0.61	0.50	-	-	-	0.25	-	0.86	0.50	0.79	PM PHF
18:00	19:00	-	-	-	8	12	-	-	-	-	-	6	-	26	NIGHT PEAK
18:00	19:00	-	-	-	0.67	0.75	-	-	-	-	-	0.50	-	0.65	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	2	-	4	-	-	-	1	-	11	-	18	MORNING TOTAL
06:00	09:00	4	-	31	18	42	-	-	-	-	2	64	1	162	AM TOTAL
09:00	15:00	22	-	73	68	156	-	-	-	1	1	182	16	519	MID TOTAL
15:00	18:00	9	-	16	30	62	-	-	-	1	1	63	11	193	PM TOTAL
18:00	22:00	4	-	4	11	30	-	-	-	-	-	25	2	76	NIGHT TOTAL

LOCATION	KING SHAKA INTERNATIONAL AIRPORT	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	INTERNATIONAL TRADE AVE & 610134 ST				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-17H-05-22-C

OVERVIEW MAP & VIDEO FRAME

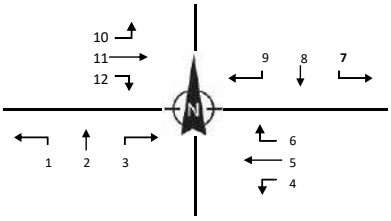
JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND
INTERNATIONAL TRADE AVE

NORTHERN APPROACH / SOUTHBOUND
610134 ST

SOUTHERN APPROACH / NORTHBOUND
UNKNOWN RD

EASTERN APPROACH / WESTBOUND
INTERNATIONAL TRADE AVE



TOTAL VEHICLES SUMMARY

	NIGHT	PM	MID	AM	MORNING
10	136	245	229	402	130
11	30	45	74	127	68
12	1	1	1	7	3

	NIGHT	PM	MID	AM	MORNING
9	169	1	13		
8	408	0	13		
7	220	5	33		
	243	3	45		
	98	3	21		

	1	2	3
NIGHT	4	1	0
PM	3	4	0
MID	7	2	0
AM	2	1	0
MORNING	1	1	0

	NIGHT	PM	MID	AM	MORNING
6	21	24	26	25	33
5	66	148	80	33	23
4	0	0	0	0	0

LIGHT VEHICLES

	NIGHT	PM	MID	AM	MORNING
10	128	208	198	369	105
11	27	40	61	109	42
12	1	1	1	7	3

	NIGHT	PM	MID	AM	MORNING
9	134	1	8		
8	366	0	11		
7	189	5	21		
	211	3	43		
	81	3	12		

	1	2	3
NIGHT	4	1	0
PM	3	4	0
MID	7	2	0
AM	2	1	0
MORNING	1	1	0

	NIGHT	PM	MID	AM	MORNING
6	15	21	22	12	7
5	58	133	66	28	16
4	0	0	0	0	0

MINI BUS TAXI

	NIGHT	PM	MID	AM	MORNING
10	8	0	4	18	21
11	1	22	6	28	25
12	0	0	0	0	0

	NIGHT	PM	MID	AM	MORNING
9	27	0	4		
8	15	0	12		
7	4	0	1		
	42	0	6		
	17	0	7		

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	NIGHT	PM	MID	AM	MORNING
6	5	19	4	27	26
5	6	9	6	10	5
4	0	0	0	0	0

BUSSES

	NIGHT	PM	MID	AM	MORNING
10	0	1	0	1	0
11	0	0	0	0	0
12	0	0	0	0	0

	NIGHT	PM	MID	AM	MORNING
9	0	0	0		
8	1	0	0		
7	0	0	0		
	1	0	0		
	0	0	0		

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	NIGHT	PM	MID	AM	MORNING
6	0	0	0	0	0
5	0	0	0	0	0
4	0	0	0	0	0

HEAVY VEHICLES

	NIGHT	PM	MID	AM	MORNING
10	6	25	37	23	4
11	2	7	8	6	1
12	0	0	8	0	0

	NIGHT	PM	MID	AM	MORNING
9	5	0	3		
8	42	0	4		
7	17	0	5		
	17	0	3		
	0	0	2		

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	1	0
MORNING	0	0	0

	NIGHT	PM	MID	AM	MORNING
6	0	2	4	3	0
5	14	14	11	15	2
4	0	0	0	0	0

LOCATION	IG SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	INTERNATIONAL TRADE AVE & 610134 ST		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P2	DATA: J.A.V	TYPE: 4W-17H-05-22-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	1	-	-	2	2	3	-	13	17	8	-	46	46
05:15	05:30	-	-	-	-	4	3	1	-	21	31	11	1	72	118
05:30	05:45	1	-	-	-	7	13	7	1	21	53	24	2	129	247
05:45	06:00	-	-	-	-	10	15	10	2	43	29	25	-	134	381
06:00	06:15	2	-	-	-	25	22	7	-	51	41	26	2	176	
06:15	06:30	-	-	-	-	10	6	6	-	35	80	15	-	152	
06:30	06:45	1	-	-	-	9	12	6	-	55	123	18	1	225	
06:45	07:00	1	-	-	1	6	7	7	-	45	105	35	1	208	761
07:00	07:15	1	1	-	-	8	7	7	1	60	110	21	1	217	802
07:15	07:30	1	-	-	-	12	4	8	1	53	113	23	2	217	867
07:30	07:45	-	-	-	-	6	7	8	1	59	101	35	1	218	860
07:45	08:00	-	-	-	-	7	7	22	-	71	78	48	3	236	888
08:00	08:15	-	-	-	-	16	5	11	1	45	62	32	1	173	844
08:15	08:30	-	1	-	-	14	3	10	-	44	53	33	1	159	786
08:30	08:45	-	1	-	-	15	8	8	2	35	67	29	1	166	734
08:45	09:00	-	-	-	-	19	9	5	1	38	54	31	2	159	657
09:00	09:15	-	-	-	-	20	6	8	1	30	46	25	-	136	
09:15	09:30	1	1	1	1	20	7	7	-	40	54	33	1	166	
09:30	09:45	2	1	1	-	22	3	7	-	26	59	29	-	150	
09:45	10:00	-	-	2	1	17	5	2	-	35	38	20	-	120	572
10:00	10:15	-	1	-	1	18	6	4	1	37	46	14	-	128	564
10:15	10:30	-	1	1	1	9	5	4	-	36	43	17	-	117	515
10:30	10:45	1	-	-	-	16	6	3	1	37	43	19	1	127	492
10:45	11:00	-	-	1	-	19	4	7	-	34	37	14	-	116	488
11:00	11:15	1	-	-	-	15	4	4	-	36	46	20	-	126	486
11:15	11:30	1	-	1	-	21	8	3	-	49	41	24	1	149	518
11:30	11:45	-	-	-	-	21	5	3	-	33	43	18	1	124	515
11:45	12:00	-	-	-	-	16	8	5	-	46	44	19	1	139	538
12:00	12:15	-	1	-	-	27	6	4	-	60	50	14	-	162	574
12:15	12:30	-	-	-	-	21	5	8	1	44	54	16	-	149	574
12:30	12:45	-	1	-	-	22	10	15	1	46	49	17	1	162	612
12:45	13:00	3	2	-	-	15	5	4	1	37	48	16	1	132	605
13:00	13:15	1	3	-	-	12	12	6	-	53	55	21	1	164	607
13:15	13:30	4	2	-	-	27	8	6	3	50	49	12	1	162	620
13:30	13:45	-	-	-	-	17	7	8	1	41	66	16	-	156	614
13:45	14:00	-	-	-	-	16	3	11	-	58	63	15	-	166	648
14:00	14:15	3	-	-	-	20	8	8	1	71	51	31	-	193	677
14:15	14:30	-	-	-	-	17	5	5	1	33	67	15	-	143	658
14:30	14:45	1	-	-	-	19	7	4	-	53	56	13	2	155	657
14:45	15:00	4	1	-	-	25	7	6	-	60	60	14	-	177	668
15:00	15:15	4	2	-	-	24	7	6	-	71	54	14	1	183	
15:15	15:30	-	-	-	-	30	7	5	-	71	66	6	1	186	
15:30	15:45	1	-	1	-	28	6	7	-	50	49	19	2	163	
15:45	16:00	2	2	-	-	23	6	7	-	84	37	12	-	173	705
16:00	16:15	2	3	-	-	37	2	6	-	92	52	12	1	207	729
16:15	16:30	1	-	-	-	34	8	2	-	84	74	13	-	216	759
16:30	16:45	-	-	-	-	42	10	4	-	135	58	12	-	261	857
16:45	17:00	-	1	-	-	35	4	1	-	97	61	8	-	207	891
17:00	17:15	1	-	-	-	22	12	7	-	101	46	9	-	198	882
17:15	17:30	1	-	-	-	23	13	5	-	86	43	14	-	185	851
17:30	17:45	-	-	-	-	20	13	7	-	72	59	21	-	192	782
17:45	18:00	-	-	-	-	17	16	10	-	67	65	37	1	213	788
18:00	18:15	2	-	-	-	32	13	10	1	79	54	10	-	201	
18:15	18:30	1	-	-	-	17	4	2	-	36	33	7	-	100	
18:30	18:45	-	1	-	-	12	3	-	-	28	26	6	1	77	
18:45	19:00	1	-	-	-	5	1	1	-	26	23	7	-	64	442
19:00	19:15	-	-	-	-	14	4	2	1	30	28	8	-	87	328
19:15	19:30	1	-	-	-	5	3	1	-	30	23	4	1	68	296
19:30	19:45	-	-	-	-	5	3	-	-	18	25	5	-	56	275
19:45	20:00	3	1	-	-	4	-	-	1	15	16	4	-	44	255
20:00	20:15	-	-	-	-	6	1	3	-	11	17	3	-	41	209
20:15	20:30	2	-	1	-	2	1	-	1	8	14	6	-	35	176
20:30	20:45	-	-	-	-	6	-	1	-	12	21	4	-	44	164
20:45	21:00	1	-	-	-	1	-	2	-	4	19	4	-	31	151
21:00	21:15	-	-	-	-	4	1	-	-	12	15	-	-	32	142
21:15	21:30	-	-	-	-	4	-	2	-	11	7	1	-	25	132
21:30	21:45	-	-	-	-	6	-	1	-	8	13	1	-	29	117
21:45	22:00	-	-	-	-	6	2	-	-	5	15	4	-	32	118
TOTAL		52	28	9	5	1 086	420	360	26	3 077	3 338	1 117	38	9 556	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	1	1	-	-	23	33	21	3	98	130	68	3	381	MORNING PEAK
05:00	06:00	0.25	0.25	-	-	0.57	0.55	0.52	0.38	0.57	0.61	0.68	0.38	0.71	MORNING PHF
07:00	08:00	2	1	-	-	33	25	45	3	243	402	127	7	888	AM PEAK
07:00	08:00	0.50	0.25	-	-	0.69	0.89	0.51	0.75	0.86	0.89	0.66	0.58	0.94	AM PHF
13:15	14:15	7	2	-	-	80	26	33	5	220	229	74	1	677	MID PEAK
13:15	14:15	0.44	0.25	-	-	0.74	0.81	0.41	0.42	0.77	0.87	0.60	0.25	0.88	MID PHF
16:00	17:00	3	4	-	-	148	24	13	-	408	245	45	1	891	PM PEAK
16:00	17:00	0.38	0.33	-	-	0.88	0.60	0.09	-	0.76	0.83	0.87	0.25	0.85	PM PHF
18:00	19:00	4	1	-	-	66	21	13	1	169	136	30	1	442	NIGHT PEAK
18:00	19:00	0.50	0.25	-	-	0.52	0.40	0.32	0.25	0.53	0.63	0.75	0.25	0.55	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	1	1	-	-	23	33	21	3	98	130	68	3	381	MORNING TOTAL
06:00	09:00	6	3	-	1	147	97	105	7	591	987	346	16	2 306	AM TOTAL
09:00	15:00	22	14	7	4	452	150	142	12	1 045	1 208	452	11	3 519	MID TOTAL
15:00	18:00	12	8	1	-	335	104	67	-	1 010	664	177	6	2 384	PM TOTAL
18:00	22:00	11	2	1	-	129	36	25	4	333	349	74	2	966	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	INTERNATIONAL TRADE AVE & 610134 ST		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P2	DATA: J.A.V	TYPE: 4W-17H-05-22-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	1	-	-	1	-	2	-	12	15	6	-	37	37
05:15	05:30	-	-	-	-	3	-	1	-	16	23	7	1	51	88
05:30	05:45	1	-	-	-	5	5	2	1	17	42	13	2	88	176
05:45	06:00	-	-	-	-	7	2	7	2	36	25	16	-	95	271
06:00	06:15	2	-	-	-	18	13	3	-	36	37	18	2	129	
06:15	06:30	-	-	-	-	8	1	6	-	27	75	8	-	125	
06:30	06:45	1	-	-	-	6	4	4	-	45	104	10	1	175	
06:45	07:00	1	-	-	1	5	1	7	-	35	95	27	1	173	602
07:00	07:15	1	1	-	-	8	1	6	1	52	100	14	1	185	658
07:15	07:30	1	-	-	-	11	1	8	1	47	107	18	2	196	729
07:30	07:45	-	-	-	-	4	5	8	1	52	89	32	1	192	746
07:45	08:00	-	-	-	-	5	5	21	-	60	73	45	3	212	785
08:00	08:15	-	-	-	-	11	3	11	1	39	59	29	1	154	754
08:15	08:30	-	-	-	-	12	1	10	-	36	49	30	1	139	697
08:30	08:45	-	1	-	-	12	6	7	2	31	56	26	1	142	647
08:45	09:00	-	-	-	-	14	7	3	1	34	45	28	2	134	569
09:00	09:15	-	-	-	-	20	3	4	1	25	37	23	-	113	
09:15	09:30	1	1	1	1	19	6	7	-	33	47	28	1	145	
09:30	09:45	2	1	1	-	19	3	3	-	20	45	24	-	118	
09:45	10:00	-	-	2	1	15	3	2	-	32	30	19	-	104	480
10:00	10:15	-	1	-	1	13	4	4	1	27	39	12	-	102	469
10:15	10:30	-	1	1	1	6	5	3	-	31	30	14	-	92	416
10:30	10:45	1	-	-	-	15	5	2	1	27	39	19	1	110	408
10:45	11:00	-	-	1	-	17	3	7	-	24	33	12	-	97	401
11:00	11:15	1	-	-	-	12	3	3	-	31	33	16	-	99	398
11:15	11:30	1	-	1	-	17	6	3	-	42	34	19	1	124	430
11:30	11:45	-	-	-	-	18	4	2	-	23	34	13	1	95	415
11:45	12:00	-	-	-	-	12	6	2	-	43	39	16	1	119	437
12:00	12:15	-	1	-	-	21	5	3	-	51	39	13	-	133	471
12:15	12:30	-	-	-	-	18	4	5	1	36	47	14	-	125	472
12:30	12:45	-	1	-	-	20	8	11	1	39	42	14	1	137	514
12:45	13:00	3	2	-	-	10	4	1	1	31	41	14	1	108	503
13:00	13:15	1	3	-	-	8	7	5	-	40	48	15	1	128	498
13:15	13:30	4	2	-	-	25	6	3	3	41	43	10	1	138	511
13:30	13:45	-	-	-	-	12	6	5	1	32	59	13	-	128	502
13:45	14:00	-	-	-	-	13	2	8	-	52	54	13	-	142	536
14:00	14:15	3	-	-	-	16	8	5	1	64	42	25	-	164	572
14:15	14:30	-	-	-	-	14	5	5	1	25	57	14	-	121	555
14:30	14:45	1	-	-	-	17	4	3	-	45	45	13	2	130	557
14:45	15:00	4	1	-	-	22	5	5	-	43	47	12	-	139	554
15:00	15:15	4	2	-	-	20	7	5	-	52	40	11	1	142	
15:15	15:30	-	-	-	-	26	5	4	-	57	54	5	1	152	
15:30	15:45	1	-	1	-	24	5	5	-	44	42	17	2	141	
15:45	16:00	2	2	-	-	20	6	5	-	69	33	8	-	145	580
16:00	16:15	2	3	-	-	33	2	6	-	84	42	9	1	182	620
16:15	16:30	1	-	-	-	29	6	1	-	73	67	12	-	189	657
16:30	16:45	-	-	-	-	40	9	3	-	124	49	12	-	237	753
16:45	17:00	-	1	-	-	31	4	1	-	85	50	7	-	179	787
17:00	17:15	1	-	-	-	18	10	3	-	89	43	6	-	170	775
17:15	17:30	1	-	-	-	20	8	2	-	79	35	8	-	153	739
17:30	17:45	-	-	-	-	18	6	3	-	64	56	14	-	161	663
17:45	18:00	-	-	-	-	14	11	6	-	57	60	29	1	178	662
18:00	18:15	2	-	-	-	25	9	5	1	59	50	9	-	160	
18:15	18:30	1	-	-	-	17	3	2	-	28	30	6	-	87	
18:30	18:45	-	1	-	-	11	2	-	-	22	26	6	1	69	
18:45	19:00	1	-	-	-	5	1	1	-	25	22	6	-	61	377
19:00	19:15	-	-	-	-	12	3	2	1	29	28	6	-	81	298
19:15	19:30	1	-	-	-	3	3	-	-	28	22	3	1	61	272
19:30	19:45	-	-	-	-	5	2	-	-	16	23	5	-	51	254
19:45	20:00	3	1	-	-	4	-	-	1	14	16	3	-	42	235
20:00	20:15	-	-	-	-	6	1	3	-	11	17	3	-	41	195
20:15	20:30	2	-	1	-	2	1	-	1	7	14	6	-	34	168
20:30	20:45	-	-	-	-	5	-	1	-	11	19	4	-	40	157
20:45	21:00	1	-	-	-	1	-	1	-	4	17	4	-	28	143
21:00	21:15	-	-	-	-	4	1	-	-	10	14	-	-	29	131
21:15	21:30	-	-	-	-	4	-	-	-	8	6	1	-	19	116
21:30	21:45	-	-	-	-	5	-	-	-	7	10	1	-	23	99
21:45	22:00	-	-	-	-	5	2	-	-	5	13	2	-	27	98
TOTAL		52	27	9	5	916	277	266	26	2 593	2 896	915	38	8 020	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	1	1	-	-	16	7	12	3	81	105	42	3	271	MORNING PEAK
05:00	06:00	0.25	0.25	-	-	0.57	0.35	0.43	0.38	0.56	0.62	0.66	0.38	0.71	MORNING PHF
07:00	08:00	2	1	-	-	28	12	43	3	211	369	109	7	785	AM PEAK
07:00	08:00	0.50	0.25	-	-	0.64	0.60	0.51	0.75	0.88	0.86	0.61	0.58	0.93	AM PHF
13:15	14:15	7	2	-	-	66	22	21	5	189	198	61	1	572	MID PEAK
13:15	14:15	0.44	0.25	-	-	0.66	0.69	0.33	0.42	0.74	0.84	0.61	0.25	0.87	MID PHF
16:00	17:00	3	4	-	-	133	21	11	-	366	208	40	1	787	PM PEAK
16:00	17:00	0.38	0.33	-	-	0.83	0.58	0.09	-	0.74	0.78	0.83	0.25	0.83	PM PHF
18:00	19:00	4	1	-	-	58	15	8	1	134	128	27	1	377	NIGHT PEAK
18:00	19:00	0.50	0.25	-	-	0.58	0.42	0.40	0.25	0.57	0.64	0.75	0.25	0.59	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	1	1	-	-	16	7	12	3	81	105	42	3	271	MORNING TOTAL
06:00	09:00	6	2	-	1	114	48	94	7	494	889	285	16	1 956	AM TOTAL
09:00	15:00	22	14	7	4	379	115	101	12	857	1 004	385	11	2 911	MID TOTAL
15:00	18:00	12	8	1	-	293	79	44	-	877	571	138	6	2 029	PM TOTAL
18:00	22:00	11	2	1	-	114	28	15	4	284	327	65	2	853	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	INTERNATIONAL TRADE AVE & 610134 ST		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P2	DATA: J.A.V	TYPE: 4W-17H-05-22-C

unitraf

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	1	2	1	-	1	1	2	-	8	8
05:15	05:30	-	-	-	-	1	3	-	-	5	8	4	-	21	29
05:30	05:45	-	-	-	-	-	8	4	-	4	10	10	-	36	65
05:45	06:00	-	-	-	-	3	13	2	-	7	2	9	-	36	101
06:00	06:15	-	-	-	-	6	9	4	-	14	2	8	-	43	
06:15	06:30	-	-	-	-	1	5	-	-	8	1	6	-	21	
06:30	06:45	-	-	-	-	2	7	2	-	10	13	7	-	41	
06:45	07:00	-	-	-	-	1	6	-	-	10	2	7	-	26	131
07:00	07:15	-	-	-	-	-	6	-	-	7	5	6	-	24	112
07:15	07:30	-	-	-	-	-	3	-	-	5	4	3	-	15	106
07:30	07:45	-	-	-	-	1	2	-	-	4	3	3	-	13	78
07:45	08:00	-	-	-	-	1	2	-	-	6	1	3	-	13	65
08:00	08:15	-	-	-	-	-	2	-	-	2	1	2	-	7	48
08:15	08:30	-	-	-	-	-	1	-	-	1	1	1	-	4	37
08:30	08:45	-	-	-	-	-	1	-	-	1	1	2	-	5	29
08:45	09:00	-	-	-	-	-	1	-	-	1	1	1	-	4	20
09:00	09:15	-	-	-	-	-	-	-	-	-	2	-	-	2	
09:15	09:30	-	-	-	-	-	-	-	-	3	-	-	-	3	
09:30	09:45	-	-	-	-	-	-	-	-	-	3	1	-	4	
09:45	10:00	-	-	-	-	1	-	-	-	-	-	-	-	1	10
10:00	10:15	-	-	-	-	2	-	-	-	1	1	-	-	4	12
10:15	10:30	-	-	-	-	-	-	-	-	1	1	-	-	2	11
10:30	10:45	-	-	-	-	1	-	-	-	2	1	-	-	4	11
10:45	11:00	-	-	-	-	-	-	-	-	1	1	1	-	3	13
11:00	11:15	-	-	-	-	1	-	-	-	2	3	1	-	7	16
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	14
11:30	11:45	-	-	-	-	-	-	-	-	2	1	2	-	5	15
11:45	12:00	-	-	-	-	1	1	-	-	-	2	2	-	6	18
12:00	12:15	-	-	-	-	1	-	-	-	5	3	1	-	10	21
12:15	12:30	-	-	-	-	-	-	-	-	-	1	-	-	1	22
12:30	12:45	-	-	-	-	1	-	1	-	2	1	-	-	5	22
12:45	13:00	-	-	-	-	1	1	-	-	1	-	1	-	4	20
13:00	13:15	-	-	-	-	3	2	1	-	-	-	4	-	10	20
13:15	13:30	-	-	-	-	1	-	-	-	4	1	-	-	6	25
13:30	13:45	-	-	-	-	1	1	-	-	2	3	1	-	8	28
13:45	14:00	-	-	-	-	-	-	-	-	1	2	-	-	3	27
14:00	14:15	-	-	-	-	-	-	-	-	2	1	1	-	4	21
14:15	14:30	-	-	-	-	-	-	-	-	1	2	-	-	3	18
14:30	14:45	-	-	-	-	1	1	-	-	2	1	-	-	5	15
14:45	15:00	-	-	-	-	-	-	-	-	5	2	-	-	7	19
15:00	15:15	-	-	-	-	-	-	-	-	1	3	1	-	5	
15:15	15:30	-	-	-	-	-	-	-	-	4	4	-	-	8	
15:30	15:45	-	-	-	-	1	1	1	-	2	3	1	-	9	
15:45	16:00	-	-	-	-	-	-	1	-	5	1	1	-	8	30
16:00	16:15	-	-	-	-	2	-	-	-	4	7	-	-	13	38
16:15	16:30	-	-	-	-	1	-	1	-	6	2	1	-	11	41
16:30	16:45	-	-	-	-	-	1	1	-	5	6	-	-	13	45
16:45	17:00	-	-	-	-	-	-	-	-	5	5	-	-	10	47
17:00	17:15	-	-	-	-	4	2	4	-	4	2	3	-	19	53
17:15	17:30	-	-	-	-	2	5	2	-	3	7	4	-	23	65
17:30	17:45	-	-	-	-	2	7	3	-	3	3	7	-	25	77
17:45	18:00	-	-	-	-	1	5	3	-	5	4	8	-	26	93
18:00	18:15	-	-	-	-	6	4	4	-	17	4	1	-	36	
18:15	18:30	-	-	-	-	-	1	-	-	7	3	-	-	11	
18:30	18:45	-	-	-	-	-	-	-	-	2	-	-	-	2	
18:45	19:00	-	-	-	-	-	-	-	-	1	1	-	-	2	51
19:00	19:15	-	-	-	-	-	-	-	-	1	-	-	-	1	16
19:15	19:30	-	-	-	-	-	-	-	-	2	1	-	-	3	8
19:30	19:45	-	-	-	-	-	-	-	-	-	1	-	-	1	7
19:45	20:00	-	-	-	-	-	-	-	-	1	-	-	-	1	6
20:00	20:15	-	-	-	-	-	-	-	-	-	-	-	-	-	5
20:15	20:30	-	-	-	-	-	-	-	-	1	-	-	-	1	3
20:30	20:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
20:45	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
21:00	21:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
21:15	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:30	21:45	-	-	-	-	-	-	-	-	1	1	-	-	2	2
21:45	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
TOTAL		-	-	-	-	51	103	35	-	203	146	116	-	654	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	5	26	7	-	17	21	25	-	101	MORNING PEAK
05:00	06:00	-	-	-	-	0.42	0.50	0.44	-	0.61	0.52	0.62	-	0.70	MORNING PHF
06:00	07:00	-	-	-	-	10	27	6	-	42	18	28	-	131	AM PEAK
06:00	07:00	-	-	-	-	0.42	0.75	0.38	-	0.75	0.35	0.88	-	0.76	AM PHF
12:45	13:45	-	-	-	-	6	4	1	-	7	4	6	-	28	MID PEAK
12:45	13:45	-	-	-	-	0.50	0.50	0.25	-	0.44	0.33	0.38	-	0.70	MID PHF
17:00	18:00	-	-	-	-	9	19	12	-	15	16	22	-	93	PM PEAK
17:00	18:00	-	-	-	-	0.56	0.68	0.75	-	0.75	0.57	0.69	-	0.89	PM PHF
18:00	19:00	-	-	-	-	6	5	4	-	27	8	1	-	51	NIGHT PEAK
18:00	19:00	-	-	-	-	0.25	0.31	0.25	-	0.40	0.50	0.25	-	0.35	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	5	26	7	-	17	21	25	-	101	MORNING TOTAL
06:00	09:00	-	-	-	-	12	45	6	-	69	35	49	-	216	AM TOTAL
09:00	15:00	-	-	-	-	15	6	2	-	37	32	15	-	107	MID TOTAL
15:00	18:00	-	-	-	-	13	21	16	-	47	47	26	-	170	PM TOTAL
18:00	22:00	-	-	-	-	6	5	4	-	33	11	1	-	60	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	INTERNATIONAL TRADE AVE & 610134 ST				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P2	DATA: J.A.V	TYPE:	4W-17H-05-22-C	

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:15	05:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:30	05:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:45	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:00	07:15	-	-	-	-	-	-	-	-	1	1	-	-	2	2
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:45	16:00	-	-	-	-	-	-	-	-	-	1	-	-	1	1
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:30	16:45	-	-	-	-	-	-	-	-	1	-	-	-	1	2
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:00	17:15	-	-	-	-	-	-	-	-	1	-	-	-	1	2
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
18:00	18:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
18:15	18:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
18:30	18:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
18:45	19:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
19:00	19:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
19:15	19:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
19:30	19:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
19:45	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
20:00	20:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
20:15	20:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
20:30	20:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
20:45	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:00	21:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:15	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:30	21:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:45	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		-	-	-	-	-	-	-	-	3	2	-	-	5	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
00:00	00:30	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING PEAK
00:00	00:30	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING PHF
06:15	07:15	-	-	-	-	-	-	-	-	1	1	-	-	2	AM PEAK
06:15	07:15	-	-	-	-	-	-	-	-	0.25	0.25	-	-	0.25	AM PHF
09:00	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	MID PEAK
09:00	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	MID PHF
15:45	16:45	-	-	-	-	-	-	-	-	1	1	-	-	2	PM PEAK
15:45	16:45	-	-	-	-	-	-	-	-	0.25	0.25	-	-	0.50	PM PHF
18:00	19:00	-	-	-	-	-	-	-	-	-	-	-	-	-	NIGHT PEAK
18:00	19:00	-	-	-	-	-	-	-	-	-	-	-	-	-	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING TOTAL
06:00	09:00	-	-	-	-	-	-	-	-	1	1	-	-	2	AM TOTAL
09:00	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	MID TOTAL
15:00	18:00	-	-	-	-	-	-	-	-	2	1	-	-	3	PM TOTAL
18:00	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	INTERNATIONAL TRADE AVE & 610134 ST		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P2	DATA: J.A.V	TYPE: 4W-17H-05-22-C

unitraf

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	-	-	-	-	1	-	-	1	1
05:15	05:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
05:30	05:45	-	-	-	-	2	-	1	-	-	1	1	-	5	6
05:45	06:00	-	-	-	-	-	-	1	-	-	2	-	-	3	9
06:00	06:15	-	-	-	-	1	-	-	-	1	2	-	-	4	
06:15	06:30	-	-	-	-	1	-	-	-	-	4	1	-	6	
06:30	06:45	-	-	-	-	1	1	-	-	-	6	1	-	9	
06:45	07:00	-	-	-	-	-	-	-	-	-	8	1	-	9	28
07:00	07:15	-	-	-	-	-	-	1	-	-	4	1	-	6	30
07:15	07:30	-	-	-	-	1	-	-	-	1	2	2	-	6	30
07:30	07:45	-	-	-	-	1	-	-	-	3	9	-	-	13	34
07:45	08:00	-	-	-	-	1	-	1	-	5	4	-	-	11	36
08:00	08:15	-	-	-	-	5	-	-	-	4	2	1	-	12	42
08:15	08:30	-	1	-	-	2	1	-	-	7	3	2	-	16	52
08:30	08:45	-	-	-	-	3	1	1	-	3	10	1	-	19	58
08:45	09:00	-	-	-	-	5	1	2	-	3	8	2	-	21	68
09:00	09:15	-	-	-	-	-	3	4	-	5	7	2	-	21	
09:15	09:30	-	-	-	-	1	1	-	-	4	7	5	-	18	
09:30	09:45	-	-	-	-	3	-	4	-	6	11	4	-	28	
09:45	10:00	-	-	-	-	1	2	-	-	3	8	1	-	15	82
10:00	10:15	-	-	-	-	3	2	-	-	9	6	2	-	22	83
10:15	10:30	-	-	-	-	3	-	1	-	4	12	3	-	23	88
10:30	10:45	-	-	-	-	-	1	1	-	8	3	-	-	13	73
10:45	11:00	-	-	-	-	2	1	-	-	9	3	1	-	16	74
11:00	11:15	-	-	-	-	2	1	1	-	3	10	3	-	20	72
11:15	11:30	-	-	-	-	4	2	-	-	7	7	5	-	25	74
11:30	11:45	-	-	-	-	3	1	1	-	8	8	3	-	24	85
11:45	12:00	-	-	-	-	3	1	3	-	3	3	1	-	14	83
12:00	12:15	-	-	-	-	5	1	1	-	4	8	-	-	19	82
12:15	12:30	-	-	-	-	3	1	3	-	8	6	2	-	23	80
12:30	12:45	-	-	-	-	1	2	3	-	5	6	3	-	20	76
12:45	13:00	-	-	-	-	4	-	3	-	5	7	1	-	20	82
13:00	13:15	-	-	-	-	1	3	-	-	13	7	2	-	26	89
13:15	13:30	-	-	-	-	1	2	3	-	5	5	2	-	18	84
13:30	13:45	-	-	-	-	4	-	3	-	7	4	2	-	20	84
13:45	14:00	-	-	-	-	3	1	3	-	5	7	2	-	21	85
14:00	14:15	-	-	-	-	4	-	3	-	5	8	5	-	25	84
14:15	14:30	-	-	-	-	3	-	-	-	7	8	1	-	19	85
14:30	14:45	-	-	-	-	1	2	1	-	6	10	-	-	20	85
14:45	15:00	-	-	-	-	3	2	1	-	12	11	2	-	31	95
15:00	15:15	-	-	-	-	4	-	1	-	18	11	2	-	36	
15:15	15:30	-	-	-	-	4	2	1	-	10	8	1	-	26	
15:30	15:45	-	-	-	-	3	-	1	-	4	4	1	-	13	
15:45	16:00	-	-	-	-	3	-	1	-	10	2	3	-	19	94
16:00	16:15	-	-	-	-	2	-	-	-	4	3	3	-	12	70
16:15	16:30	-	-	-	-	4	2	-	-	5	5	-	-	16	60
16:30	16:45	-	-	-	-	2	-	-	-	5	3	-	-	10	57
16:45	17:00	-	-	-	-	4	-	-	-	7	6	1	-	18	56
17:00	17:15	-	-	-	-	-	-	-	-	7	1	-	-	8	52
17:15	17:30	-	-	-	-	1	-	1	-	4	1	2	-	9	45
17:30	17:45	-	-	-	-	-	-	1	-	5	-	-	-	6	41
17:45	18:00	-	-	-	-	2	-	1	-	5	1	-	-	9	32
18:00	18:15	-	-	-	-	1	-	1	-	3	-	-	-	5	
18:15	18:30	-	-	-	-	-	-	-	-	1	-	1	-	2	
18:30	18:45	-	-	-	-	1	1	-	-	4	-	-	-	6	
18:45	19:00	-	-	-	-	-	-	-	-	-	-	1	-	1	14
19:00	19:15	-	-	-	-	2	1	-	-	-	-	2	-	5	14
19:15	19:30	-	-	-	-	2	-	1	-	-	-	1	-	4	16
19:30	19:45	-	-	-	-	-	1	-	-	2	1	-	-	4	14
19:45	20:00	-	-	-	-	-	-	-	-	-	-	1	-	1	14
20:00	20:15	-	-	-	-	-	-	-	-	-	-	-	-	-	9
20:15	20:30	-	-	-	-	-	-	-	-	-	-	-	-	-	5
20:30	20:45	-	-	-	-	1	-	-	-	1	2	-	-	4	5
20:45	21:00	-	-	-	-	-	-	1	-	-	2	-	-	3	7
21:00	21:15	-	-	-	-	-	-	-	-	2	1	-	-	3	10
21:15	21:30	-	-	-	-	-	-	2	-	3	1	-	-	6	16
21:30	21:45	-	-	-	-	1	-	1	-	-	2	-	-	4	16
21:45	22:00	-	-	-	-	1	-	-	-	-	2	2	-	5	18
TOTAL		-	1	-	-	119	40	59	-	278	294	86	-	877	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	2	-	2	-	-	4	1	-	9	MORNING PEAK
05:00	06:00	-	-	-	-	0.25	-	0.50	-	-	0.50	0.25	-	0.45	MORNING PHF
08:00	09:00	-	1	-	-	15	3	3	-	17	23	6	-	68	AM PEAK
08:00	09:00	-	0.25	-	-	0.75	0.75	0.38	-	0.61	0.57	0.75	-	0.81	AM PHF
14:00	15:00	-	-	-	-	11	4	5	-	30	37	8	-	95	MID PEAK
14:00	15:00	-	-	-	-	0.69	0.50	0.42	-	0.62	0.84	0.40	-	0.77	MID PHF
15:00	16:00	-	-	-	-	14	2	4	-	42	25	7	-	94	PM PEAK
15:00	16:00	-	-	-	-	0.88	0.25	0.33	-	0.58	0.57	0.58	-	0.65	PM PHF
21:00	22:00	-	-	-	-	2	-	3	-	5	6	2	-	18	NIGHT PEAK
21:00	22:00	-	-	-	-	0.50	-	0.38	-	0.42	0.75	0.25	-	0.75	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	2	-	2	-	-	4	1	-	9	MORNING TOTAL
06:00	09:00	-	1	-	-	21	4	5	-	27	62	12	-	132	AM TOTAL
09:00	15:00	-	-	-	-	58	29	39	-	151	172	52	-	501	MID TOTAL
15:00	18:00	-	-	-	-	29	4	7	-	84	45	13	-	182	PM TOTAL
18:00	22:00	-	-	-	-	9	3	6	-	16	11	8	-	53	NIGHT TOTAL

LOCATION	KING SHAKA INTERNATIONAL AIRPORT	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD (M65) & INTERNATIONAL TRADE AVE				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P3	DATA:	J.A.V	TYPE:	TN-17H-05-22-C

OVERVIEW MAP & VIDEO FRAME

JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND

DUBE BLVD (M65)

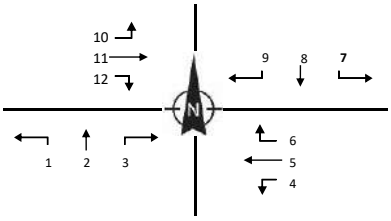
NORTHERN APPROACH / SOUTHBOUND

INTERNATIONAL TRADE AVE

SOUTHERN APPROACH / NORTHBOUND

EASTERN APPROACH / WESTBOUND

DUBE BLVD (M65)



TOTAL VEHICLES SUMMARY

	10	11	12
NIGHT	99	83	0
PM	149	119	0
MID	189	133	0
AM	382	458	0
MORNING	175	119	0

	9	8	7
NIGHT	216	0	48
PM	410	0	129
MID	222	0	87
AM	167	0	48
MORNING	104	0	14

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	6	5	4
NIGHT	69	282	0
PM	102	618	0
MID	149	198	0
AM	206	142	0
MORNING	51	52	0

LIGHT VEHICLES

	10	11	12
NIGHT	91	80	0
PM	133	101	0
MID	160	121	0
AM	354	431	0
MORNING	169	82	0

	9	8	7
NIGHT	177	0	42
PM	367	0	118
MID	188	0	76
AM	138	0	46
MORNING	86	0	11

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	6	5	4
NIGHT	67	273	0
PM	92	598	0
MID	131	181	0
AM	195	126	0
MORNING	44	48	0

MINI BUS TAXI

	10	11	12
NIGHT	8	2	0
PM	0	21	0
MID	6	4	0
AM	11	29	0
MORNING	3	34	0

	9	8	7
NIGHT	29	0	3
PM	20	0	2
MID	6	0	4
AM	45	0	5
MORNING	17	0	2

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	6	5	4
NIGHT	0	4	0
PM	5	1	0
MID	2	2	0
AM	5	5	0
MORNING	4	0	0

BUSSES

	10	11	12
NIGHT	0	0	0
PM	0	0	0
MID	1	1	0
AM	2	0	0
MORNING	0	0	0

	9	8	7
NIGHT	0	0	0
PM	1	0	0
MID	0	0	0
AM	1	0	0
MORNING	0	0	0

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	6	5	4
NIGHT	0	1	0
PM	0	1	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

HEAVY VEHICLES

	10	11	12
NIGHT	4	2	0
PM	20	6	0
MID	30	9	9
AM	7	6	0
MORNING	3	3	0

	9	8	7
NIGHT	5	0	4
PM	42	0	14
MID	21	0	12
AM	21	0	9
MORNING	1	0	1

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	6	5	4
NIGHT	4	14	0
PM	9	14	0
MID	20	16	0
AM	19	6	0
MORNING	3	4	0

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD (M65) & INTERNATIONAL TRADE AVE		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P3	DATA: J.A.V	TYPE: TN-17H-05-22-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	10	6	-	-	8	22	18	-	64	64
05:15	05:30	-	-	-	-	14	10	5	-	27	42	30	-	128	192
05:30	05:45	-	-	-	-	12	19	4	-	35	54	35	-	159	351
05:45	06:00	-	-	-	-	16	16	5	-	34	57	36	-	164	515
06:00	06:15	-	-	-	-	29	21	18	-	44	63	51	-	226	
06:15	06:30	-	-	-	-	23	31	9	-	45	58	76	-	242	
06:30	06:45	-	-	-	-	24	61	14	-	36	91	89	-	315	
06:45	07:00	-	-	-	-	34	48	7	-	46	97	124	-	356	1139
07:00	07:15	-	-	-	-	37	55	16	-	41	106	115	-	370	1283
07:15	07:30	-	-	-	-	31	43	10	-	39	80	112	-	315	1356
07:30	07:45	-	-	-	-	40	60	15	-	41	99	107	-	362	1403
07:45	08:00	-	-	-	-	32	61	6	-	45	82	75	-	301	1348
08:00	08:15	-	-	-	-	29	41	14	-	35	69	45	-	233	1211
08:15	08:30	-	-	-	-	34	53	11	-	31	46	42	-	217	1113
08:30	08:45	-	-	-	-	35	43	17	-	38	44	40	-	217	968
08:45	09:00	-	-	-	-	29	51	18	-	40	38	30	-	206	873
09:00	09:15	-	-	-	-	28	36	18	-	24	33	18	-	157	
09:15	09:30	-	-	-	-	36	39	26	-	36	36	28	-	201	
09:30	09:45	-	-	-	-	32	36	17	-	25	44	32	-	186	
09:45	10:00	-	-	-	-	38	25	22	-	27	32	28	-	172	716
10:00	10:15	-	-	-	-	29	16	17	-	41	42	22	-	167	726
10:15	10:30	-	-	-	-	46	39	15	-	28	46	31	-	205	730
10:30	10:45	-	-	-	-	42	30	14	-	32	35	32	-	185	729
10:45	11:00	-	-	-	-	27	29	27	-	37	31	35	-	186	743
11:00	11:15	-	-	-	-	34	33	19	-	24	32	25	-	167	743
11:15	11:30	-	-	-	-	44	32	19	-	39	51	26	-	211	749
11:30	11:45	-	-	-	-	33	23	23	-	38	45	45	-	207	771
11:45	12:00	-	-	-	-	28	39	24	-	31	59	25	-	206	791
12:00	12:15	-	-	-	-	44	25	24	-	52	51	37	-	233	857
12:15	12:30	-	-	-	-	34	27	18	-	43	50	29	-	201	847
12:30	12:45	-	-	-	-	44	30	25	-	28	52	39	-	218	858
12:45	13:00	-	-	-	-	49	25	20	-	51	39	34	-	218	870
13:00	13:15	-	-	-	-	30	25	12	-	56	51	35	-	209	846
13:15	13:30	-	-	-	-	41	28	32	-	46	42	40	-	229	874
13:30	13:45	-	-	-	-	44	25	16	-	48	59	31	-	223	879
13:45	14:00	-	-	-	-	52	27	20	-	50	50	43	-	242	903
14:00	14:15	-	-	-	-	49	57	31	-	68	42	28	-	275	969
14:15	14:30	-	-	-	-	53	40	20	-	56	38	31	-	238	978
14:30	14:45	-	-	-	-	56	19	23	-	48	49	16	-	211	966
14:45	15:00	-	-	-	-	44	33	29	-	65	39	22	-	232	956
15:00	15:15	-	-	-	-	55	22	35	-	70	36	28	-	246	
15:15	15:30	-	-	-	-	51	24	33	-	71	40	29	-	248	
15:30	15:45	-	-	-	-	56	26	32	-	49	37	17	-	217	
15:45	16:00	-	-	-	-	61	35	34	-	69	32	15	-	246	957
16:00	16:15	-	-	-	-	97	16	59	-	97	38	29	-	336	1047
16:15	16:30	-	-	-	-	126	23	36	-	90	53	26	-	354	1153
16:30	16:45	-	-	-	-	140	30	42	-	122	45	23	-	402	1338
16:45	17:00	-	-	-	-	168	29	37	-	100	33	34	-	401	1493
17:00	17:15	-	-	-	-	157	22	30	-	101	31	22	-	363	1520
17:15	17:30	-	-	-	-	153	21	20	-	87	40	40	-	361	1527
17:30	17:45	-	-	-	-	148	27	18	-	65	40	34	-	332	1457
17:45	18:00	-	-	-	-	164	41	16	-	65	35	24	-	345	1401
18:00	18:15	-	-	-	-	128	21	16	-	88	29	20	-	302	
18:15	18:30	-	-	-	-	72	15	23	-	53	25	24	-	212	
18:30	18:45	-	-	-	-	48	16	5	-	42	22	19	-	152	
18:45	19:00	-	-	-	-	34	17	4	-	33	23	20	-	131	797
19:00	19:15	-	-	-	-	51	14	7	-	39	17	25	-	153	648
19:15	19:30	-	-	-	-	46	9	3	-	32	17	19	-	126	562
19:30	19:45	-	-	-	-	42	6	7	-	27	16	10	-	108	518
19:45	20:00	-	-	-	-	33	8	7	-	21	15	13	-	97	484
20:00	20:15	-	-	-	-	23	5	4	-	32	20	10	-	94	425
20:15	20:30	-	-	-	-	28	10	3	-	17	13	12	-	83	382
20:30	20:45	-	-	-	-	30	10	4	-	36	9	13	-	102	376
20:45	21:00	-	-	-	-	23	7	3	-	13	14	4	-	64	343
21:00	21:15	-	-	-	-	28	3	6	-	32	11	8	-	88	337
21:15	21:30	-	-	-	-	23	3	6	-	16	5	3	-	56	310
21:30	21:45	-	-	-	-	13	7	5	-	17	10	7	-	59	267
21:45	22:00	-	-	-	-	13	4	5	-	13	9	4	-	48	251
TOTAL		-	-	-	-	3 397	1 828	1 180	-	3 075	2 811	2 289	-	14 580	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	52	51	14	-	104	175	119	-	515	MORNING PEAK
05:00	06:00	-	-	-	-	0.81	0.67	0.70	-	0.74	0.77	0.83	-	0.79	MORNING PHF
06:45	07:45	-	-	-	-	142	206	48	-	167	382	458	-	1 403	AM PEAK
06:45	07:45	-	-	-	-	0.89	0.86	0.75	-	0.91	0.90	0.92	-	0.95	AM PHF
13:30	14:30	-	-	-	-	198	149	87	-	222	189	133	-	978	MID PEAK
13:30	14:30	-	-	-	-	0.93	0.65	0.41	-	0.82	0.80	0.77	-	0.89	MID PHF
16:30	17:30	-	-	-	-	618	102	129	-	410	149	119	-	1 527	PM PEAK
16:30	17:30	-	-	-	-	0.92	0.85	0.21	-	0.84	0.83	0.74	-	0.95	PM PHF
18:00	19:00	-	-	-	-	282	69	48	-	216	99	83	-	797	NIGHT PEAK
18:00	19:00	-	-	-	-	0.55	0.82	0.35	-	0.61	0.85	0.86	-	0.66	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	52	51	14	-	104	175	119	-	515	MORNING TOTAL
06:00	09:00	-	-	-	-	377	568	155	-	481	873	906	-	3 360	AM TOTAL
09:00	15:00	-	-	-	-	957	738	511	-	993	1 048	732	-	4 979	MID TOTAL
15:00	18:00	-	-	-	-	1 376	316	392	-	986	460	321	-	3 851	PM TOTAL
18:00	22:00	-	-	-	-	635	155	108	-	511	255	211	-	1 875	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD (M65) & INTERNATIONAL TRADE AVE				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P3	DATA: J.A.V	TYPE:	TN-17H-05-22-C	

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	9	6	-	-	7	21	14	-	57	57
05:15	05:30	-	-	-	-	13	10	4	-	21	40	17	-	105	162
05:30	05:45	-	-	-	-	11	16	3	-	30	54	23	-	137	299
05:45	06:00	-	-	-	-	15	12	4	-	28	54	28	-	141	440
06:00	06:15	-	-	-	-	28	21	13	-	33	60	44	-	199	
06:15	06:30	-	-	-	-	21	25	7	-	31	52	68	-	204	
06:30	06:45	-	-	-	-	21	55	13	-	25	82	80	-	276	
06:45	07:00	-	-	-	-	30	45	7	-	35	90	115	-	322	1001
07:00	07:15	-	-	-	-	33	51	16	-	33	100	109	-	342	1144
07:15	07:30	-	-	-	-	27	40	9	-	35	75	105	-	291	1231
07:30	07:45	-	-	-	-	36	59	14	-	35	89	102	-	335	1290
07:45	08:00	-	-	-	-	28	57	5	-	36	80	70	-	276	1244
08:00	08:15	-	-	-	-	24	38	9	-	32	68	43	-	214	1116
08:15	08:30	-	-	-	-	33	47	9	-	23	41	39	-	192	1017
08:30	08:45	-	-	-	-	35	35	15	-	32	40	37	-	194	876
08:45	09:00	-	-	-	-	27	45	18	-	36	34	26	-	186	786
09:00	09:15	-	-	-	-	26	32	16	-	19	26	16	-	135	
09:15	09:30	-	-	-	-	34	29	23	-	32	31	27	-	176	
09:30	09:45	-	-	-	-	32	27	13	-	19	32	29	-	152	
09:45	10:00	-	-	-	-	37	24	19	-	25	27	27	-	159	622
10:00	10:15	-	-	-	-	29	14	13	-	34	34	19	-	143	630
10:15	10:30	-	-	-	-	43	33	10	-	23	32	28	-	169	623
10:30	10:45	-	-	-	-	38	29	11	-	25	30	29	-	162	633
10:45	11:00	-	-	-	-	26	25	22	-	27	24	31	-	155	629
11:00	11:15	-	-	-	-	33	29	14	-	21	26	24	-	147	633
11:15	11:30	-	-	-	-	37	25	17	-	31	43	22	-	175	639
11:30	11:45	-	-	-	-	29	19	18	-	30	39	40	-	175	652
11:45	12:00	-	-	-	-	27	35	22	-	26	55	22	-	187	684
12:00	12:15	-	-	-	-	39	24	21	-	45	43	33	-	205	742
12:15	12:30	-	-	-	-	32	23	15	-	37	43	27	-	177	744
12:30	12:45	-	-	-	-	41	26	21	-	24	44	35	-	191	760
12:45	13:00	-	-	-	-	45	22	17	-	44	34	32	-	194	767
13:00	13:15	-	-	-	-	30	22	11	-	42	45	33	-	183	745
13:15	13:30	-	-	-	-	39	26	27	-	39	35	37	-	203	771
13:30	13:45	-	-	-	-	37	22	15	-	36	55	31	-	196	776
13:45	14:00	-	-	-	-	46	24	16	-	44	40	39	-	209	791
14:00	14:15	-	-	-	-	49	48	26	-	61	34	23	-	241	849
14:15	14:30	-	-	-	-	49	37	19	-	47	31	28	-	211	857
14:30	14:45	-	-	-	-	49	14	21	-	39	35	15	-	173	834
14:45	15:00	-	-	-	-	39	29	27	-	53	32	20	-	200	825
15:00	15:15	-	-	-	-	50	20	30	-	53	26	26	-	205	
15:15	15:30	-	-	-	-	48	20	31	-	55	31	28	-	213	
15:30	15:45	-	-	-	-	53	22	31	-	39	33	14	-	192	
15:45	16:00	-	-	-	-	56	33	28	-	59	26	14	-	216	826
16:00	16:15	-	-	-	-	91	13	56	-	89	30	28	-	307	928
16:15	16:30	-	-	-	-	121	22	32	-	79	49	23	-	326	1041
16:30	16:45	-	-	-	-	133	27	39	-	112	40	21	-	372	1221
16:45	17:00	-	-	-	-	165	25	35	-	89	29	33	-	376	1381
17:00	17:15	-	-	-	-	149	21	24	-	92	27	17	-	330	1404
17:15	17:30	-	-	-	-	151	19	20	-	74	37	30	-	331	1409
17:30	17:45	-	-	-	-	142	27	17	-	59	36	28	-	309	1346
17:45	18:00	-	-	-	-	158	36	15	-	58	34	20	-	321	1291
18:00	18:15	-	-	-	-	127	21	13	-	71	25	18	-	275	
18:15	18:30	-	-	-	-	68	14	20	-	40	23	23	-	188	
18:30	18:45	-	-	-	-	46	16	5	-	33	21	19	-	140	
18:45	19:00	-	-	-	-	32	16	4	-	33	22	20	-	127	730
19:00	19:15	-	-	-	-	51	13	6	-	37	16	24	-	147	602
19:15	19:30	-	-	-	-	43	9	3	-	31	16	18	-	120	534
19:30	19:45	-	-	-	-	41	6	3	-	27	14	9	-	100	494
19:45	20:00	-	-	-	-	31	7	6	-	20	15	12	-	91	458
20:00	20:15	-	-	-	-	22	5	4	-	31	20	9	-	91	402
20:15	20:30	-	-	-	-	27	10	3	-	17	12	10	-	79	361
20:30	20:45	-	-	-	-	28	7	4	-	34	9	13	-	95	356
20:45	21:00	-	-	-	-	18	5	3	-	12	14	4	-	56	321
21:00	21:15	-	-	-	-	27	3	6	-	28	10	7	-	81	311
21:15	21:30	-	-	-	-	20	2	5	-	15	4	3	-	49	281
21:30	21:45	-	-	-	-	12	6	3	-	17	8	7	-	53	239
21:45	22:00	-	-	-	-	11	2	4	-	11	8	3	-	39	222
TOTAL		-	-	-	-	3 198	1 627	1 030	-	2 610	2 485	2 068	-	13 018	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	48	44	11	-	86	169	82	-	440	MORNING PEAK
05:00	06:00	-	-	-	-	0.80	0.69	0.69	-	0.72	0.78	0.73	-	0.78	MORNING PHF
06:45	07:45	-	-	-	-	126	195	46	-	138	354	431	-	1 290	AM PEAK
06:45	07:45	-	-	-	-	0.88	0.83	0.72	-	0.99	0.88	0.94	-	0.94	AM PHF
13:30	14:30	-	-	-	-	181	131	76	-	188	160	121	-	857	MID PEAK
13:30	14:30	-	-	-	-	0.92	0.68	0.39	-	0.77	0.73	0.78	-	0.89	MID PHF
16:30	17:30	-	-	-	-	598	92	118	-	367	133	101	-	1 409	PM PEAK
16:30	17:30	-	-	-	-	0.91	0.85	0.20	-	0.82	0.83	0.77	-	0.94	PM PHF
18:00	19:00	-	-	-	-	273	67	42	-	177	91	80	-	730	NIGHT PEAK
18:00	19:00	-	-	-	-	0.54	0.80	0.33	-	0.62	0.91	0.87	-	0.66	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	48	44	11	-	86	169	82	-	440	MORNING TOTAL
06:00	09:00	-	-	-	-	343	518	135	-	386	811	838	-	3 031	AM TOTAL
09:00	15:00	-	-	-	-	886	638	434	-	823	870	667	-	4 318	MID TOTAL
15:00	18:00	-	-	-	-	1 317	285	358	-	858	398	282	-	3 498	PM TOTAL
18:00	22:00	-	-	-	-	604	142	92	-	457	237	199	-	1 731	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD (M65) & INTERNATIONAL TRADE AVE				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P3	DATA:	J.A.V	TYPE:	TN-17H-05-22-C

unitraf

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	-	-	-	1	-	4	-	5	5
05:15	05:30	-	-	-	-	-	-	1	-	6	2	11	-	20	25
05:30	05:45	-	-	-	-	-	1	-	-	4	-	12	-	17	42
05:45	06:00	-	-	-	-	-	3	1	-	6	1	7	-	18	60
06:00	06:15	-	-	-	-	1	-	3	-	11	2	6	-	23	
06:15	06:30	-	-	-	-	1	2	2	-	14	1	8	-	28	
06:30	06:45	-	-	-	-	2	3	-	-	9	7	9	-	30	
06:45	07:00	-	-	-	-	1	-	-	-	11	1	6	-	19	100
07:00	07:15	-	-	-	-	2	1	-	-	7	4	5	-	19	96
07:15	07:30	-	-	-	-	2	1	-	-	4	2	4	-	13	81
07:30	07:45	-	-	-	-	2	-	-	-	4	2	4	-	12	63
07:45	08:00	-	-	-	-	-	-	1	-	1	1	2	-	5	49
08:00	08:15	-	-	-	-	4	-	-	-	2	-	1	-	7	37
08:15	08:30	-	-	-	-	-	-	-	-	1	2	2	-	5	29
08:30	08:45	-	-	-	-	-	2	-	-	1	1	2	-	6	23
08:45	09:00	-	-	-	-	-	-	-	-	1	1	-	-	2	20
09:00	09:15	-	-	-	-	-	-	-	-	-	1	-	-	1	
09:15	09:30	-	-	-	-	1	-	1	-	2	-	-	-	4	
09:30	09:45	-	-	-	-	-	1	-	-	1	3	-	-	5	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	10
10:00	10:15	-	-	-	-	-	-	1	-	-	2	1	-	4	13
10:15	10:30	-	-	-	-	-	-	2	-	-	1	-	-	3	12
10:30	10:45	-	-	-	-	1	-	-	-	2	1	1	-	5	12
10:45	11:00	-	-	-	-	-	1	1	-	-	2	1	-	5	17
11:00	11:15	-	-	-	-	-	1	3	-	2	1	1	-	8	21
11:15	11:30	-	-	-	-	-	-	-	-	1	1	-	-	2	20
11:30	11:45	-	-	-	-	2	-	-	-	2	2	2	-	8	23
11:45	12:00	-	-	-	-	-	-	-	-	-	-	1	-	1	19
12:00	12:15	-	-	-	-	-	-	-	-	2	1	3	-	6	17
12:15	12:30	-	-	-	-	-	-	1	-	1	1	1	-	4	19
12:30	12:45	-	-	-	-	-	-	-	-	1	1	1	-	3	14
12:45	13:00	-	-	-	-	-	-	-	-	2	-	-	-	2	15
13:00	13:15	-	-	-	-	-	1	-	-	4	-	1	-	6	15
13:15	13:30	-	-	-	-	-	-	-	-	4	2	1	-	7	18
13:30	13:45	-	-	-	-	-	-	-	-	3	2	-	-	5	20
13:45	14:00	-	-	-	-	-	-	-	-	-	2	1	-	3	21
14:00	14:15	-	-	-	-	-	-	-	-	3	2	1	-	6	21
14:15	14:30	-	-	-	-	1	-	-	-	3	3	1	-	8	22
14:30	14:45	-	-	-	-	-	-	-	-	2	2	-	-	4	21
14:45	15:00	-	-	-	-	-	-	-	-	3	1	-	-	4	22
15:00	15:15	-	-	-	-	-	-	-	-	1	3	-	-	4	
15:15	15:30	-	-	-	-	1	1	-	-	2	1	-	-	5	
15:30	15:45	-	-	-	-	1	1	-	-	3	1	1	-	7	
15:45	16:00	-	-	-	-	-	1	-	-	5	3	-	-	9	25
16:00	16:15	-	-	-	-	1	-	1	-	4	4	-	-	10	31
16:15	16:30	-	-	-	-	1	-	-	-	4	2	3	-	10	36
16:30	16:45	-	-	-	-	2	-	-	-	6	3	1	-	12	41
16:45	17:00	-	-	-	-	2	-	-	-	3	2	1	-	8	40
17:00	17:15	-	-	-	-	-	-	2	-	7	3	5	-	17	47
17:15	17:30	-	-	-	-	-	1	-	-	6	3	7	-	17	54
17:30	17:45	-	-	-	-	-	-	-	-	2	4	5	-	11	53
17:45	18:00	-	-	-	-	1	4	-	-	5	1	4	-	15	60
18:00	18:15	-	-	-	-	1	-	2	-	15	4	1	-	23	
18:15	18:30	-	-	-	-	2	-	1	-	10	2	1	-	16	
18:30	18:45	-	-	-	-	-	-	-	-	4	1	-	-	5	
18:45	19:00	-	-	-	-	1	-	-	-	-	1	-	-	2	46
19:00	19:15	-	-	-	-	-	-	-	-	1	-	-	-	1	24
19:15	19:30	-	-	-	-	-	-	-	-	1	-	1	-	2	10
19:30	19:45	-	-	-	-	1	-	-	-	-	1	1	-	3	8
19:45	20:00	-	-	-	-	-	-	-	-	1	-	-	-	1	7
20:00	20:15	-	-	-	-	-	-	-	-	-	-	-	-	-	6
20:15	20:30	-	-	-	-	-	-	-	-	-	1	-	-	1	5
20:30	20:45	-	-	-	-	-	-	-	-	1	-	-	-	1	3
20:45	21:00	-	-	-	-	2	-	-	-	1	-	-	-	3	5
21:00	21:15	-	-	-	-	-	-	-	-	2	-	-	-	2	7
21:15	21:30	-	-	-	-	1	-	-	-	-	-	-	-	1	7
21:30	21:45	-	-	-	-	-	-	-	-	-	1	-	-	1	7
21:45	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	4
TOTAL		-	-	-	-	37	25	23	-	205	99	131	-	520	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	-	4	2	-	17	3	34	-	60	MORNING PEAK
05:00	06:00	-	-	-	-	-	0.33	0.50	-	0.71	0.38	0.71	-	0.75	MORNING PHF
06:00	07:00	-	-	-	-	5	5	5	-	45	11	29	-	100	AM PEAK
06:00	07:00	-	-	-	-	0.62	0.42	0.42	-	0.80	0.39	0.81	-	0.83	AM PHF
10:45	11:45	-	-	-	-	2	2	4	-	5	6	4	-	23	MID PEAK
10:45	11:45	-	-	-	-	0.25	0.50	0.33	-	0.62	0.75	0.50	-	0.72	MID PHF
17:00	18:00	-	-	-	-	1	5	2	-	20	11	21	-	60	PM PEAK
17:00	18:00	-	-	-	-	0.25	0.31	0.25	-	0.71	0.69	0.75	-	0.88	PM PHF
18:00	19:00	-	-	-	-	4	-	3	-	29	8	2	-	46	NIGHT PEAK
18:00	19:00	-	-	-	-	0.50	-	0.38	-	0.48	0.50	0.50	-	0.50	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	-	4	2	-	17	3	34	-	60	MORNING TOTAL
06:00	09:00	-	-	-	-	15	9	6	-	66	24	49	-	169	AM TOTAL
09:00	15:00	-	-	-	-	5	4	9	-	38	31	17	-	104	MID TOTAL
15:00	18:00	-	-	-	-	9	8	3	-	48	30	27	-	125	PM TOTAL
18:00	22:00	-	-	-	-	8	-	3	-	36	11	4	-	62	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD (M65) & INTERNATIONAL TRADE AVE		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P3	DATA: J.A.V	TYPE: TN-17H-05-22-C

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:15	05:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:30	05:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:45	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	1	-	-	1	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	1	-	-	1	2
07:00	07:15	-	-	-	-	-	-	-	-	1	-	-	-	1	3
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:15	08:30	-	-	-	-	-	-	-	-	-	1	-	-	1	1
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	1	-	1	1
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:45	15:00	-	-	-	-	-	-	-	-	-	1	-	-	1	2
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	-	-	-	-	1	-	-	1	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:30	16:45	-	-	-	-	-	-	-	-	1	-	-	-	1	1
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:00	17:15	-	-	-	-	1	-	-	-	-	-	-	-	1	2
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
18:00	18:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
18:15	18:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
18:30	18:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
18:45	19:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
19:00	19:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
19:15	19:30	-	-	-	-	1	-	-	-	-	-	-	-	1	1
19:30	19:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
19:45	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
20:00	20:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
20:15	20:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
20:30	20:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
20:45	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:00	21:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:15	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:30	21:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:45	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		-	-	-	-	2	-	-	-	2	5	1	-	10	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
00:00	00:30	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING PEAK
00:00	00:30	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING PHF
06:15	07:15	-	-	-	-	-	-	-	-	1	2	-	-	3	AM PEAK
06:15	07:15	-	-	-	-	-	-	-	-	0.25	0.50	-	-	0.75	AM PHF
14:00	15:00	-	-	-	-	-	-	-	-	-	1	1	-	2	MID PEAK
14:00	15:00	-	-	-	-	-	-	-	-	-	0.25	0.25	-	0.50	MID PHF
16:15	17:15	-	-	-	-	1	-	-	-	1	-	-	-	2	PM PEAK
16:15	17:15	-	-	-	-	0.25	-	-	-	0.25	-	-	-	0.50	PM PHF
18:30	19:30	-	-	-	-	1	-	-	-	-	-	-	-	1	NIGHT PEAK
18:30	19:30	-	-	-	-	0.25	-	-	-	-	-	-	-	0.25	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING TOTAL
06:00	09:00	-	-	-	-	-	-	-	-	1	3	-	-	4	AM TOTAL
09:00	15:00	-	-	-	-	-	-	-	-	-	1	1	-	2	MID TOTAL
15:00	18:00	-	-	-	-	1	-	-	-	1	1	-	-	3	PM TOTAL
18:00	22:00	-	-	-	-	1	-	-	-	-	-	-	-	1	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD (M65) & INTERNATIONAL TRADE AVE				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P3	DATA: J.A.V	TYPE:	TN-17H-05-22-C	

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	1	-	-	-	-	1	-	-	2	2
05:15	05:30	-	-	-	-	1	-	-	-	-	-	2	-	3	5
05:30	05:45	-	-	-	-	1	2	1	-	1	-	-	-	5	10
05:45	06:00	-	-	-	-	1	1	-	-	-	2	1	-	5	15
06:00	06:15	-	-	-	-	-	-	2	-	-	1	1	-	4	
06:15	06:30	-	-	-	-	1	4	-	-	-	4	-	-	9	
06:30	06:45	-	-	-	-	1	3	1	-	2	2	-	-	9	
06:45	07:00	-	-	-	-	3	3	-	-	-	5	3	-	14	36
07:00	07:15	-	-	-	-	2	3	-	-	-	2	1	-	8	40
07:15	07:30	-	-	-	-	2	2	1	-	-	3	3	-	11	42
07:30	07:45	-	-	-	-	2	1	1	-	2	8	1	-	15	48
07:45	08:00	-	-	-	-	4	4	-	-	8	1	3	-	20	54
08:00	08:15	-	-	-	-	1	3	5	-	1	1	1	-	12	58
08:15	08:30	-	-	-	-	1	6	2	-	7	2	1	-	19	66
08:30	08:45	-	-	-	-	-	6	2	-	5	3	1	-	17	68
08:45	09:00	-	-	-	-	2	6	-	-	3	3	4	-	18	66
09:00	09:15	-	-	-	-	2	4	2	-	5	6	2	-	21	
09:15	09:30	-	-	-	-	1	10	2	-	2	5	1	-	21	
09:30	09:45	-	-	-	-	-	8	4	-	5	9	3	-	29	
09:45	10:00	-	-	-	-	1	1	3	-	2	5	1	-	13	84
10:00	10:15	-	-	-	-	-	2	3	-	7	6	2	-	20	83
10:15	10:30	-	-	-	-	3	6	3	-	5	13	3	-	33	95
10:30	10:45	-	-	-	-	3	1	3	-	5	4	2	-	18	84
10:45	11:00	-	-	-	-	1	3	4	-	10	5	3	-	26	97
11:00	11:15	-	-	-	-	1	3	2	-	1	5	-	-	12	89
11:15	11:30	-	-	-	-	7	7	2	-	7	7	4	-	34	90
11:30	11:45	-	-	-	-	2	4	5	-	6	4	3	-	24	96
11:45	12:00	-	-	-	-	1	4	2	-	5	4	2	-	18	88
12:00	12:15	-	-	-	-	5	1	3	-	5	7	1	-	22	98
12:15	12:30	-	-	-	-	2	4	2	-	5	6	1	-	20	84
12:30	12:45	-	-	-	-	3	4	4	-	3	7	3	-	24	84
12:45	13:00	-	-	-	-	4	3	3	-	5	5	2	-	22	88
13:00	13:15	-	-	-	-	-	2	1	-	10	6	1	-	20	86
13:15	13:30	-	-	-	-	2	2	5	-	3	5	2	-	19	85
13:30	13:45	-	-	-	-	7	3	1	-	9	2	-	-	22	83
13:45	14:00	-	-	-	-	6	3	4	-	6	8	3	-	30	91
14:00	14:15	-	-	-	-	-	9	5	-	4	6	3	-	27	98
14:15	14:30	-	-	-	-	3	3	1	-	6	4	2	-	19	98
14:30	14:45	-	-	-	-	7	5	2	-	7	12	1	-	34	110
14:45	15:00	-	-	-	-	5	4	2	-	9	5	2	-	27	107
15:00	15:15	-	-	-	-	5	2	5	-	16	7	2	-	37	
15:15	15:30	-	-	-	-	2	3	2	-	14	8	1	-	30	
15:30	15:45	-	-	-	-	2	3	1	-	7	2	2	-	17	
15:45	16:00	-	-	-	-	5	1	6	-	5	3	1	-	21	105
16:00	16:15	-	-	-	-	5	3	2	-	4	4	1	-	19	87
16:15	16:30	-	-	-	-	4	1	4	-	7	2	-	-	18	75
16:30	16:45	-	-	-	-	5	3	3	-	3	2	1	-	17	75
16:45	17:00	-	-	-	-	1	4	2	-	8	2	-	-	17	71
17:00	17:15	-	-	-	-	7	1	4	-	2	1	-	-	15	67
17:15	17:30	-	-	-	-	2	1	-	-	7	-	3	-	13	62
17:30	17:45	-	-	-	-	6	-	1	-	4	-	1	-	12	57
17:45	18:00	-	-	-	-	5	1	1	-	2	-	-	-	9	49
18:00	18:15	-	-	-	-	-	-	1	-	2	-	1	-	4	
18:15	18:30	-	-	-	-	2	1	2	-	3	-	-	-	8	
18:30	18:45	-	-	-	-	2	-	-	-	5	-	-	-	7	
18:45	19:00	-	-	-	-	1	1	-	-	-	-	-	-	2	21
19:00	19:15	-	-	-	-	-	1	1	-	1	1	1	-	5	22
19:15	19:30	-	-	-	-	2	-	-	-	-	1	-	-	3	17
19:30	19:45	-	-	-	-	-	-	4	-	-	1	-	-	5	15
19:45	20:00	-	-	-	-	2	1	1	-	-	-	1	-	5	18
20:00	20:15	-	-	-	-	1	-	-	-	1	-	1	-	3	16
20:15	20:30	-	-	-	-	1	-	-	-	-	-	2	-	3	16
20:30	20:45	-	-	-	-	2	3	-	-	1	-	-	-	6	17
20:45	21:00	-	-	-	-	3	2	-	-	-	-	-	-	5	17
21:00	21:15	-	-	-	-	1	-	-	-	2	1	1	-	5	19
21:15	21:30	-	-	-	-	2	1	1	-	1	1	-	-	6	22
21:30	21:45	-	-	-	-	1	1	2	-	-	1	-	-	5	21
21:45	22:00	-	-	-	-	2	2	1	-	2	1	1	-	9	25
TOTAL		-	-	-	-	160	176	127	-	258	222	89	-	1 032	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	4	3	1	-	1	3	3	-	15	MORNING PEAK
05:00	06:00	-	-	-	-	1.00	0.38	0.25	-	0.25	0.38	0.38	-	0.75	MORNING PHF
07:45	08:45	-	-	-	-	6	19	9	-	21	7	6	-	68	AM PEAK
07:45	08:45	-	-	-	-	0.38	0.79	0.45	-	0.66	0.58	0.50	-	0.85	AM PHF
13:45	14:45	-	-	-	-	16	20	12	-	23	30	9	-	110	MID PEAK
13:45	14:45	-	-	-	-	0.57	0.56	0.43	-	0.82	0.62	0.75	-	0.81	MID PHF
15:00	16:00	-	-	-	-	14	9	14	-	42	20	6	-	105	PM PEAK
15:00	16:00	-	-	-	-	0.70	0.75	0.70	-	0.66	0.62	0.75	-	0.71	PM PHF
21:00	22:00	-	-	-	-	6	4	4	-	5	4	2	-	25	NIGHT PEAK
21:00	22:00	-	-	-	-	0.75	0.50	0.50	-	0.62	1.00	0.50	-	0.69	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	4	3	1	-	1	3	3	-	15	MORNING TOTAL
06:00	09:00	-	-	-	-	19	41	14	-	28	35	19	-	156	AM TOTAL
09:00	15:00	-	-	-	-	66	96	68	-	132	146	47	-	555	MID TOTAL
15:00	18:00	-	-	-	-	49	23	31	-	79	31	12	-	225	PM TOTAL
18:00	22:00	-	-	-	-	22	13	13	-	18	7	8	-	81	NIGHT TOTAL

LOCATION	KING SHAKA INTERNATIONAL AIRPORT	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	BOULEVARD RD & DUBE BLVD				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P4	DATA:	D.L	TYPE:	4W-17H-05-22-C

OVERVIEW MAP & VIDEO FRAME

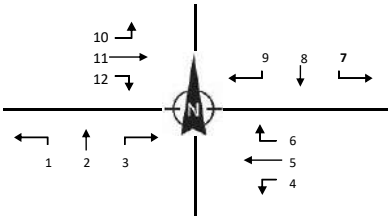
JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND
DUBE BLVD

NORTHERN APPROACH / SOUTHBOUND
BOULEVARD RD

SOUTHERN APPROACH / NORTHBOUND
DUBE AVE

EASTERN APPROACH / WESTBOUND
DUBE BLVD



TOTAL VEHICLES SUMMARY

	NIGHT	PM	MID	AM	MORNING
10	45	43	44	31	37
11	81	141	165	441	92
12	8	22	10	33	3
9	68	4	370		NIGHT
8	72	6	325		PM
7	53	8	279		MID
	40	5	104		AM
	27	2	47		MORNING

	1	2	3
NIGHT	16	2	12
PM	32	7	34
MID	13	3	4
AM	24	12	25
MORNING	8	4	2

	NIGHT	PM	MID	AM	MORNING
6	270	359	289	323	329
5	265	625	273	275	69
4	11	25	16	32	5

LIGHT VEHICLES

	NIGHT	PM	MID	AM	MORNING
10	43	38	44	29	32
11	74	113	143	416	57
12	8	22	10	32	3
9	68	4	351		NIGHT
8	69	6	319		PM
7	53	8	275		MID
	36	5	99		AM
	27	2	47		MORNING

	1	2	3
NIGHT	16	2	12
PM	32	7	34
MID	13	3	4
AM	24	12	25
MORNING	8	4	2

	NIGHT	PM	MID	AM	MORNING
6	263	352	287	315	326
5	256	599	239	255	58
4	11	25	15	31	5

MINI BUS TAXI

	NIGHT	PM	MID	AM	MORNING
10	2	0	0	4	5
11	3	19	8	29	31
12	0	0	2	0	0
9	0	0	15		NIGHT
8	2	0	5		PM
7	0	0	3		MID
	1	0	2		AM
	0	0	0		MORNING

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	1	0	0
AM	0	0	0
MORNING	0	0	0

	NIGHT	PM	MID	AM	MORNING
6	5	4	6	6	3
5	2	6	3	8	4
4	0	0	0	1	0

BUSSES

	NIGHT	PM	MID	AM	MORNING
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
9	0	0	2		NIGHT
8	0	0	0		PM
7	0	4	0		MID
	0	0	0		AM
	0	0	0		MORNING

	1	2	3
NIGHT	0	0	0
PM	0	0	0
MID	0	0	0
AM	0	0	0
MORNING	0	0	0

	NIGHT	PM	MID	AM	MORNING
6	1	3	0	1	0
5	0	0	0	0	0
4	0	0	0	0	0

HEAVY VEHICLES

	NIGHT	PM	MID	AM	MORNING
10	0	0	0	1	0
11	5	18	23	14	4
12	0	0	23	0	0
9	0	0	0		NIGHT
8	2	0	0		PM
7	0	1	1		MID
	0	0	1		AM
	0	0	0		MORNING

	1	2	3
NIGHT	1	0	0
PM	0	0	0
MID	2	0	0
AM	1	0	0
MORNING	0	0	0

	NIGHT	PM	MID	AM	MORNING
6	0	0	2	0	0
5	24	24	27	25	7
4	1	0	0	1	0

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	BOULEVARD RD & DUBE BLVD		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P4	DATA: D.L	TYPE: 4W-17H-05-22-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	1	-	-	11	87	10	-	6	7	10	1	133	133
05:15	05:30	1	-	2	3	14	82	11	1	9	6	27	-	156	289
05:30	05:45	3	3	-	1	21	85	9	-	5	14	24	2	167	456
05:45	06:00	4	-	-	1	23	75	17	1	7	10	31	-	169	625
06:00	06:15	2	1	1	-	39	74	12	1	10	4	61	1	206	
06:15	06:30	5	1	5	3	39	78	13	2	10	9	71	2	238	
06:30	06:45	5	-	7	4	82	70	15	-	5	8	92	4	292	
06:45	07:00	5	4	8	5	61	91	12	1	10	10	101	7	315	1051
07:00	07:15	7	3	6	5	79	96	31	1	7	6	115	11	367	1212
07:15	07:30	5	5	9	13	52	68	45	1	11	8	123	3	343	1317
07:30	07:45	7	-	2	9	83	68	16	2	12	7	102	12	320	1345
07:45	08:00	7	8	4	9	77	59	17	5	5	10	61	8	270	1300
08:00	08:15	4	7	5	15	57	76	41	5	6	5	47	6	274	1207
08:15	08:30	7	-	-	10	66	57	62	3	12	13	35	10	275	1139
08:30	08:45	2	1	-	14	61	33	54	4	13	8	46	4	240	1059
08:45	09:00	5	-	-	14	74	39	29	1	4	6	33	5	210	999
09:00	09:15	4	2	2	6	48	44	20	1	10	4	27	4	172	
09:15	09:30	6	1	1	3	60	47	15	-	7	5	44	4	193	
09:30	09:45	3	2	-	3	63	40	19	-	4	8	38	3	183	
09:45	10:00	5	1	3	6	49	40	33	1	6	5	37	6	192	740
10:00	10:15	1	-	4	3	45	53	37	1	5	4	31	5	189	757
10:15	10:30	1	5	5	6	71	48	15	-	6	8	28	5	198	762
10:30	10:45	6	1	3	3	60	65	19	1	6	10	32	4	210	789
10:45	11:00	2	2	-	3	45	78	31	1	10	16	44	3	235	832
11:00	11:15	6	1	1	1	44	63	41	1	12	8	33	5	216	859
11:15	11:30	7	2	1	9	58	65	49	2	9	6	33	6	247	908
11:30	11:45	7	2	1	2	47	67	40	-	7	19	48	4	244	942
11:45	12:00	2	1	-	5	53	55	38	-	9	8	31	3	205	912
12:00	12:15	3	3	1	1	60	61	55	2	4	12	50	3	255	951
12:15	12:30	3	-	1	3	45	66	18	2	10	12	33	2	195	899
12:30	12:45	5	-	-	3	48	69	44	2	18	18	35	5	247	902
12:45	13:00	3	-	2	3	56	67	63	1	15	14	37	6	267	964
13:00	13:15	3	3	5	5	36	69	30	2	14	11	32	4	214	923
13:15	13:30	4	2	-	6	54	78	34	2	11	10	51	9	261	989
13:30	13:45	3	1	-	9	51	68	56	3	14	15	32	2	254	996
13:45	14:00	1	-	-	1	65	80	48	2	13	11	47	3	271	1000
14:00	14:15	4	-	3	3	85	86	76	2	15	10	43	5	332	1118
14:15	14:30	5	2	1	3	72	55	99	1	11	8	43	-	300	1157
14:30	14:45	4	2	2	6	57	68	58	4	13	6	27	3	250	1153
14:45	15:00	1	3	-	5	58	45	39	2	15	5	43	4	220	1102
15:00	15:15	5	3	-	-	59	62	74	2	10	2	55	6	278	
15:15	15:30	2	1	3	1	66	52	56	3	9	2	51	5	251	
15:30	15:45	2	-	4	4	72	58	36	2	8	8	40	5	239	
15:45	16:00	4	-	4	4	80	61	55	-	9	8	37	2	264	1032
16:00	16:15	4	1	11	3	94	84	32	-	15	14	62	4	324	1078
16:15	16:30	6	-	9	3	110	71	58	1	26	9	47	6	346	1173
16:30	16:45	14	2	15	2	158	108	45	1	16	12	54	6	433	1367
16:45	17:00	8	1	9	7	159	91	30	-	11	12	57	5	390	1493
17:00	17:15	14	1	8	7	145	76	38	3	15	8	43	6	364	1533
17:15	17:30	6	3	4	5	148	68	30	1	13	12	35	8	333	1520
17:30	17:45	8	3	12	9	159	98	76	2	12	15	36	5	435	1522
17:45	18:00	4	-	10	4	173	117	181	-	32	8	27	3	559	1691
18:00	18:15	6	-	3	2	113	67	182	2	31	9	24	3	442	
18:15	18:30	5	-	1	6	60	58	99	-	17	12	36	4	298	
18:30	18:45	3	1	5	3	54	58	35	1	8	11	12	1	192	
18:45	19:00	2	1	3	-	38	87	54	1	12	13	9	-	220	1152
19:00	19:15	2	-	1	1	40	62	108	-	23	14	19	1	271	981
19:15	19:30	1	-	-	1	39	59	104	1	16	12	9	1	243	926
19:30	19:45	1	1	2	-	31	48	81	1	15	7	10	-	197	931
19:45	20:00	-	-	-	2	26	67	52	1	13	6	15	2	184	895
20:00	20:15	-	2	1	1	18	52	55	-	11	6	8	-	154	778
20:15	20:30	2	-	-	-	31	32	41	-	7	6	9	-	128	663
20:30	20:45	-	4	-	-	17	24	112	-	22	9	7	1	196	662
20:45	21:00	-	-	-	1	17	10	50	1	13	1	6	-	99	577
21:00	21:15	-	-	1	1	15	4	17	-	13	2	12	-	65	488
21:15	21:30	-	1	-	-	22	-	8	-	4	-	10	-	45	405
21:30	21:45	-	1	1	-	21	-	7	2	2	-	11	1	46	255
21:45	22:00	-	-	-	-	13	2	3	-	1	4	7	-	30	186
TOTAL		257	96	192	271	4 147	4 191	3 090	86	760	586	2 626	249	16 551	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	8	4	2	5	69	329	47	2	27	37	92	3	625	MORNING PEAK
05:00	06:00	0.50	0.33	0.25	0.42	0.75	0.95	0.69	0.50	0.75	0.66	0.74	0.38	0.92	MORNING PHF
06:45	07:45	24	12	25	32	275	323	104	5	40	31	441	33	1 345	AM PEAK
06:45	07:45	0.86	0.60	0.69	0.62	0.83	0.84	0.58	0.62	0.83	0.78	0.90	0.69	0.92	AM PHF
13:30	14:30	13	3	4	16	273	289	279	8	53	44	165	10	1 157	MID PEAK
13:30	14:30	0.65	0.38	0.33	0.44	0.80	0.84	0.92	0.67	0.88	0.73	0.88	0.50	0.87	MID PHF
17:00	18:00	32	7	34	25	625	359	325	6	72	43	141	22	1 691	PM PEAK
17:00	18:00	0.57	0.58	0.71	0.69	0.90	0.77	0.47	0.50	0.56	0.72	0.82	0.69	0.76	PM PHF
18:00	19:00	16	2	12	11	265	270	370	4	68	45	81	8	1 152	NIGHT PEAK
18:00	19:00	0.67	0.50	0.60	0.46	0.59	0.78	0.51	0.50	0.55	0.87	0.56	0.50	0.65	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	8	4	2	5	69	329	47	2	27	37	92	3	625	MORNING TOTAL
06:00	09:00	61	30	47	101	770	809	347	26	105	94	887	73	3 350	AM TOTAL
09:00	15:00	89	36	36	98	1 330	1 477	977	33	244	233	899	98	5 550	MID TOTAL
15:00	18:00	77	15	89	49	1 423	946	711	15	176	110	544	61	4 216	PM TOTAL
18:00	22:00	22	11	18	18	555	630	1 008	10	208	112	204	14	2 810	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	BOULEVARD RD & DUBE BLVD		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P4	DATA: D.L	TYPE: 4W-17H-05-22-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	1	-	-	10	87	10	-	6	6	7	1	128	128
05:15	05:30	1	-	2	3	13	82	11	1	9	4	16	-	142	270
05:30	05:45	3	3	-	1	17	83	9	-	5	12	13	2	148	418
05:45	06:00	4	-	-	1	18	74	17	1	7	10	21	-	153	571
06:00	06:15	2	1	1	-	38	74	12	1	10	3	52	1	195	
06:15	06:30	3	1	5	3	36	77	13	2	10	8	60	2	220	
06:30	06:45	5	-	7	4	72	70	14	-	5	7	83	4	271	
06:45	07:00	5	4	8	5	56	87	11	1	9	9	94	7	296	982
07:00	07:15	7	3	6	4	73	95	30	1	6	5	111	10	351	1138
07:15	07:30	5	5	9	13	47	66	44	1	9	8	115	3	325	1243
07:30	07:45	7	-	2	9	79	67	14	2	12	7	96	12	307	1279
07:45	08:00	7	8	4	9	70	58	16	5	5	10	55	8	255	1238
08:00	08:15	4	7	5	15	51	73	39	5	5	5	40	6	255	1142
08:15	08:30	6	-	-	9	60	56	60	3	12	13	30	10	259	1076
08:30	08:45	2	1	-	14	55	33	54	4	13	8	41	4	229	998
08:45	09:00	5	-	-	14	64	39	26	1	4	5	31	5	194	937
09:00	09:15	3	2	2	6	44	44	17	1	9	4	24	3	159	
09:15	09:30	6	1	1	3	49	47	14	-	7	5	41	3	177	
09:30	09:45	3	2	-	3	54	39	18	-	4	8	32	2	165	
09:45	10:00	3	1	3	6	47	39	32	1	6	5	33	6	182	683
10:00	10:15	1	-	4	3	42	51	35	1	5	4	24	5	175	699
10:15	10:30	1	5	5	6	62	47	15	-	6	8	21	5	181	703
10:30	10:45	4	1	3	2	56	63	18	1	6	10	28	3	195	733
10:45	11:00	2	2	-	3	39	75	31	1	10	16	35	2	216	767
11:00	11:15	4	1	1	1	41	59	39	-	12	8	27	4	197	789
11:15	11:30	6	2	1	9	45	64	47	2	9	6	27	5	223	831
11:30	11:45	7	2	1	2	39	65	39	-	7	19	38	3	222	858
11:45	12:00	2	1	-	5	47	55	37	-	9	8	28	3	195	837
12:00	12:15	3	3	1	1	54	60	52	2	4	11	42	3	236	876
12:15	12:30	3	-	1	3	39	66	17	2	10	12	28	2	183	836
12:30	12:45	5	-	-	3	42	67	41	2	18	18	28	4	228	842
12:45	13:00	3	-	2	3	49	67	63	1	15	13	34	6	256	903
13:00	13:15	3	3	5	5	33	69	27	2	14	11	30	4	206	873
13:15	13:30	4	2	-	6	51	78	33	2	10	10	43	9	248	938
13:30	13:45	3	1	-	8	42	68	53	3	14	15	30	2	239	949
13:45	14:00	1	-	-	1	55	78	48	2	13	11	40	3	252	945
14:00	14:15	4	-	3	3	78	86	76	2	15	10	34	5	316	1055
14:15	14:30	5	2	1	3	64	55	98	1	11	8	39	-	287	1094
14:30	14:45	3	2	2	6	46	68	54	4	13	6	26	3	233	1088
14:45	15:00	1	3	-	5	49	42	38	2	14	5	37	4	200	1036
15:00	15:15	4	3	-	-	52	62	72	2	10	2	48	6	261	
15:15	15:30	2	1	3	1	61	51	54	3	9	2	48	5	240	
15:30	15:45	2	-	4	4	65	54	33	2	8	8	36	5	221	
15:45	16:00	4	-	4	4	75	56	52	-	9	8	30	2	244	966
16:00	16:15	4	1	11	3	86	82	30	-	14	14	58	4	307	1012
16:15	16:30	6	-	9	3	103	68	58	1	26	9	41	6	330	1102
16:30	16:45	14	2	15	2	150	106	44	1	15	12	48	6	415	1296
16:45	17:00	8	1	9	7	152	89	29	-	11	12	54	5	377	1429
17:00	17:15	14	1	8	7	138	74	38	3	14	8	32	6	343	1465
17:15	17:30	6	3	4	5	144	67	29	1	13	9	28	8	317	1452
17:30	17:45	8	3	12	9	155	96	74	2	11	14	30	5	419	1456
17:45	18:00	4	-	10	4	162	115	178	-	31	7	23	3	537	1616
18:00	18:15	6	-	3	2	112	66	173	2	31	8	20	3	426	
18:15	18:30	5	-	1	6	57	57	92	-	17	11	33	4	283	
18:30	18:45	3	1	5	3	52	56	34	1	8	11	12	1	187	
18:45	19:00	2	1	3	-	35	84	52	1	12	13	9	-	212	1108
19:00	19:15	2	-	1	1	39	61	107	-	23	14	17	1	266	948
19:15	19:30	1	-	-	1	36	59	104	1	16	12	8	1	239	904
19:30	19:45	1	1	2	-	30	48	80	1	15	7	6	-	191	908
19:45	20:00	-	-	-	1	23	66	52	1	13	6	13	2	177	873
20:00	20:15	-	2	1	1	17	52	52	-	11	6	7	-	149	756
20:15	20:30	1	-	-	-	30	32	40	-	7	6	7	-	123	640
20:30	20:45	-	4	-	-	13	24	112	-	22	9	7	1	192	641
20:45	21:00	-	-	-	1	11	9	50	1	13	1	6	-	92	556
21:00	21:15	-	-	1	1	14	4	16	-	13	2	11	-	62	469
21:15	21:30	-	1	-	-	18	-	8	-	4	-	9	-	40	386
21:30	21:45	-	1	1	-	18	-	7	2	2	-	9	1	41	235
21:45	22:00	-	-	-	-	10	2	3	-	1	4	5	-	25	168
TOTAL		243	96	192	266	3 784	4 113	2 995	85	747	566	2 289	239	15 615	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	8	4	2	5	58	326	47	2	27	32	57	3	571	MORNING PEAK
05:00	06:00	0.50	0.33	0.25	0.42	0.81	0.94	0.69	0.50	0.75	0.67	0.68	0.38	0.93	MORNING PHF
06:45	07:45	24	12	25	31	255	315	99	5	36	29	416	32	1 279	AM PEAK
06:45	07:45	0.86	0.60	0.69	0.60	0.81	0.83	0.56	0.62	0.75	0.81	0.90	0.67	0.91	AM PHF
13:30	14:30	13	3	4	15	239	287	275	8	53	44	143	10	1 094	MID PEAK
13:30	14:30	0.65	0.38	0.33	0.47	0.77	0.83	0.90	0.67	0.88	0.73	0.89	0.50	0.87	MID PHF
17:00	18:00	32	7	34	25	599	352	319	6	69	38	113	22	1 616	PM PEAK
17:00	18:00	0.57	0.58	0.71	0.69	0.92	0.77	0.49	0.50	0.56	0.68	0.88	0.69	0.75	PM PHF
18:00	19:00	16	2	12	11	256	263	351	4	68	43	74	8	1 108	NIGHT PEAK
18:00	19:00	0.67	0.50	0.60	0.46	0.57	0.78	0.51	0.50	0.55	0.83	0.56	0.50	0.65	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	8	4	2	5	58	326	47	2	27	32	57	3	571	MORNING TOTAL
06:00	09:00	58	30	47	99	701	795	333	26	100	88	808	72	3 157	AM TOTAL
09:00	15:00	80	36	36	96	1 167	1 452	942	32	241	231	769	89	5 171	MID TOTAL
15:00	18:00	76	15	89	49	1 343	920	691	15	171	105	476	61	4 011	PM TOTAL
18:00	22:00	21	11	18	17	515	620	982	10	208	110	179	14	2 705	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	BOULEVARD RD & DUBE BLVD		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P4	DATA: D.L	TYPE: 4W-17H-05-22-C

unitraf

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	-	-	-	-	1	3	-	4	4
05:15	05:30	-	-	-	-	-	-	-	-	-	2	9	-	11	15
05:30	05:45	-	-	-	-	1	2	-	-	-	2	10	-	15	30
05:45	06:00	-	-	-	-	3	1	-	-	-	-	9	-	13	43
06:00	06:15	-	-	-	-	1	-	-	-	-	1	6	-	8	
06:15	06:30	-	-	-	-	1	1	-	-	-	1	11	-	14	
06:30	06:45	-	-	-	-	5	-	-	-	-	1	8	-	14	
06:45	07:00	-	-	-	-	-	4	1	-	-	1	6	-	12	48
07:00	07:15	-	-	-	1	2	1	1	-	1	1	4	-	11	51
07:15	07:30	-	-	-	-	1	2	1	-	2	-	4	-	10	47
07:30	07:45	-	-	-	-	-	-	2	-	-	-	4	-	6	39
07:45	08:00	-	-	-	-	-	1	1	-	-	-	3	-	5	32
08:00	08:15	-	-	-	-	2	3	2	-	1	-	1	-	9	30
08:15	08:30	-	-	-	-	-	1	2	-	-	-	2	-	5	25
08:30	08:45	-	-	-	-	-	-	-	-	-	-	2	-	2	21
08:45	09:00	-	-	-	-	1	-	2	-	-	-	-	-	3	19
09:00	09:15	-	-	-	-	-	-	2	-	-	-	-	-	2	
09:15	09:30	-	-	-	-	1	-	-	-	-	-	1	-	2	
09:30	09:45	-	-	-	-	1	1	1	-	-	-	-	-	3	
09:45	10:00	-	-	-	-	-	1	1	-	-	-	-	-	2	9
10:00	10:15	-	-	-	-	-	-	2	-	-	-	2	-	4	11
10:15	10:30	-	-	-	-	-	1	-	-	-	-	2	-	3	12
10:30	10:45	1	-	-	-	-	-	1	-	-	-	-	-	2	11
10:45	11:00	-	-	-	-	1	2	-	-	-	-	2	1	6	15
11:00	11:15	1	-	-	-	-	2	2	-	-	-	4	1	10	21
11:15	11:30	-	-	-	-	-	1	1	-	-	-	-	-	2	20
11:30	11:45	-	-	-	-	2	1	-	-	-	-	2	-	5	23
11:45	12:00	-	-	-	-	1	-	1	-	-	-	1	-	3	20
12:00	12:15	-	-	-	-	-	1	1	-	-	1	2	-	5	15
12:15	12:30	-	-	-	-	-	-	1	-	-	-	2	-	3	16
12:30	12:45	-	-	-	-	-	1	2	-	-	-	1	-	4	15
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	12
13:00	13:15	-	-	-	-	1	-	-	-	-	-	1	-	2	9
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	6
13:30	13:45	-	-	-	-	-	-	3	-	-	-	1	-	4	6
13:45	14:00	-	-	-	-	-	2	-	-	-	-	1	-	3	9
14:00	14:15	-	-	-	-	-	-	-	-	-	-	1	-	1	8
14:15	14:30	-	-	-	-	1	-	1	-	-	-	1	-	3	11
14:30	14:45	-	-	-	-	-	-	3	-	-	-	-	-	3	10
14:45	15:00	-	-	-	-	-	2	-	-	-	-	-	-	2	9
15:00	15:15	1	-	-	-	-	-	2	-	-	-	-	-	3	
15:15	15:30	-	-	-	-	1	1	2	-	-	-	-	-	4	
15:30	15:45	-	-	-	-	1	3	3	-	-	-	1	-	8	
15:45	16:00	-	-	-	-	-	4	2	-	-	-	-	-	6	21
16:00	16:15	-	-	-	-	1	1	2	-	-	-	1	-	5	23
16:15	16:30	-	-	-	-	1	3	-	-	-	-	3	-	7	26
16:30	16:45	-	-	-	-	2	2	1	-	-	-	1	-	6	24
16:45	17:00	-	-	-	-	1	2	1	-	-	-	1	-	5	23
17:00	17:15	-	-	-	-	-	2	-	-	1	-	7	-	10	28
17:15	17:30	-	-	-	-	1	-	1	-	-	2	5	-	9	30
17:30	17:45	-	-	-	-	-	-	2	-	-	1	4	-	7	31
17:45	18:00	-	-	-	-	5	2	2	-	1	1	3	-	14	40
18:00	18:15	-	-	-	-	-	1	7	-	-	1	2	-	11	
18:15	18:30	-	-	-	-	1	1	6	-	-	1	1	-	10	
18:30	18:45	-	-	-	-	-	1	1	-	-	-	-	-	2	
18:45	19:00	-	-	-	-	1	2	1	-	-	-	-	-	4	27
19:00	19:15	-	-	-	-	-	-	1	-	-	-	-	-	1	17
19:15	19:30	-	-	-	-	-	-	-	-	-	-	1	-	1	8
19:30	19:45	-	-	-	-	1	-	-	-	-	-	1	-	2	8
19:45	20:00	-	-	-	-	-	1	-	-	-	-	-	-	1	5
20:00	20:15	-	-	-	-	-	-	2	-	-	-	-	-	2	6
20:15	20:30	-	-	-	-	-	-	1	-	-	-	-	-	1	6
20:30	20:45	-	-	-	-	-	-	-	-	-	-	-	-	-	4
20:45	21:00	-	-	-	-	1	1	-	-	-	-	-	-	2	5
21:00	21:15	-	-	-	-	-	-	1	-	-	-	-	-	1	4
21:15	21:30	-	-	-	-	1	-	-	-	-	-	-	-	1	4
21:30	21:45	-	-	-	-	-	-	-	-	-	-	-	-	-	4
21:45	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
TOTAL		3	-	-	1	43	58	72	-	6	17	137	2	339	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	4	3	-	-	-	5	31	-	43	MORNING PEAK
05:00	06:00	-	-	-	-	0.33	0.38	-	-	-	0.62	0.78	-	0.72	MORNING PHF
06:15	07:15	-	-	-	1	8	6	2	-	1	4	29	-	51	AM PEAK
06:15	07:15	-	-	-	0.25	0.40	0.38	0.50	-	0.25	1.00	0.66	-	0.91	AM PHF
10:45	11:45	1	-	-	-	3	6	3	-	-	-	8	2	23	MID PEAK
10:45	11:45	0.25	-	-	-	0.38	0.75	0.38	-	-	-	0.50	0.50	0.58	MID PHF
17:00	18:00	-	-	-	-	6	4	5	-	2	4	19	-	40	PM PEAK
17:00	18:00	-	-	-	-	0.30	0.50	0.25	-	0.50	0.50	0.68	-	0.71	PM PHF
18:00	19:00	-	-	-	-	2	5	15	-	-	2	3	-	27	NIGHT PEAK
18:00	19:00	-	-	-	-	0.50	0.62	0.54	-	-	0.50	0.38	-	0.61	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	4	3	-	-	-	5	31	-	43	MORNING TOTAL
06:00	09:00	-	-	-	1	13	13	12	-	4	5	51	-	99	AM TOTAL
09:00	15:00	2	-	-	-	8	15	22	-	-	1	24	2	74	MID TOTAL
15:00	18:00	1	-	-	-	13	20	18	-	2	4	26	-	84	PM TOTAL
18:00	22:00	-	-	-	-	5	7	20	-	-	2	5	-	39	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	BOULEVARD RD & DUBE BLVD		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P4	DATA: D.L	TYPE: 4W-17H-05-22-C

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:15	05:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:30	05:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:45	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:30	07:45	-	-	-	-	-	1	-	-	-	-	-	-	1	1
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	1	-	-	-	-	-	1	
09:15	09:30	-	-	-	-	-	-	1	-	-	-	-	-	1	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
10:00	10:15	-	-	-	-	-	1	-	-	-	-	-	-	1	2
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
10:30	10:45	-	-	-	-	-	2	-	-	-	-	-	-	2	3
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
11:00	11:15	-	-	-	-	-	1	-	-	-	-	-	-	1	3
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
11:30	11:45	-	-	-	-	-	1	1	-	-	-	-	-	2	3
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	-	-	3	-	-	-	-	-	3	3
13:15	13:30	-	-	-	-	-	-	1	-	-	-	-	-	1	4
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	4
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	4
14:00	14:15	-	-	-	-	-	-	-	-	-	-	1	-	1	2
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:30	14:45	-	-	-	-	-	-	1	-	-	-	-	-	1	2
14:45	15:00	-	-	-	-	-	1	1	-	-	-	-	-	2	4
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	1	-	-	-	-	-	-	1	
15:45	16:00	-	-	-	-	-	1	1	-	-	-	-	-	2	3
16:00	16:15	-	-	-	-	-	1	-	-	-	-	-	-	1	4
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	4
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	3
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:15	17:30	-	-	-	-	-	1	-	-	-	-	-	-	1	1
17:30	17:45	-	-	-	-	-	2	-	-	-	-	-	-	2	3
17:45	18:00	-	-	-	-	-	-	1	-	-	-	-	-	1	4
18:00	18:15	-	-	-	-	-	-	2	-	-	-	-	-	2	
18:15	18:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
18:30	18:45	-	-	-	-	-	1	-	-	-	-	-	-	1	
18:45	19:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
19:00	19:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
19:15	19:30	-	-	-	-	1	-	-	-	-	-	-	-	1	2
19:30	19:45	-	-	-	-	-	-	1	-	-	-	-	-	1	2
19:45	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
20:00	20:15	-	-	-	-	-	-	1	-	-	-	-	-	1	3
20:15	20:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
20:30	20:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
20:45	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
21:00	21:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:15	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:30	21:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:45	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		-	-	-	-	1	14	15	-	-	-	1	-	31	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
00:00	00:30	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING PEAK
00:00	00:30	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING PHF
06:45	07:45	-	-	-	-	-	1	-	-	-	-	-	-	1	AM PEAK
06:45	07:45	-	-	-	-	-	0.25	-	-	-	-	-	-	0.25	AM PHF
12:30	13:30	-	-	-	-	-	-	4	-	-	-	-	-	4	MID PEAK
12:30	13:30	-	-	-	-	-	-	0.33	-	-	-	-	-	0.33	MID PHF
15:15	16:15	-	-	-	-	-	3	1	-	-	-	-	-	4	PM PEAK
15:15	16:15	-	-	-	-	-	0.75	0.25	-	-	-	-	-	0.50	PM PHF
18:00	19:00	-	-	-	-	-	1	2	-	-	-	-	-	3	NIGHT PEAK
18:00	19:00	-	-	-	-	-	0.25	0.25	-	-	-	-	-	0.38	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING TOTAL
06:00	09:00	-	-	-	-	-	1	-	-	-	-	-	-	1	AM TOTAL
09:00	15:00	-	-	-	-	-	6	9	-	-	-	1	-	16	MID TOTAL
15:00	18:00	-	-	-	-	-	6	2	-	-	-	-	-	8	PM TOTAL
18:00	22:00	-	-	-	-	1	1	4	-	-	-	-	-	6	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	BOULEVARD RD & DUBE BLVD		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P4	DATA: D.L	TYPE: 4W-17H-05-22-C

unitraf

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	1	-	-	-	-	-	-	-	1	1
05:15	05:30	-	-	-	-	1	-	-	-	-	-	2	-	3	4
05:30	05:45	-	-	-	-	3	-	-	-	-	-	1	-	4	8
05:45	06:00	-	-	-	-	2	-	-	-	-	-	1	-	3	11
06:00	06:15	-	-	-	-	-	-	-	-	-	-	3	-	3	
06:15	06:30	2	-	-	-	2	-	-	-	-	-	-	-	4	
06:30	06:45	-	-	-	-	5	-	1	-	-	-	1	-	7	
06:45	07:00	-	-	-	-	5	-	-	-	1	-	1	-	7	21
07:00	07:15	-	-	-	-	4	-	-	-	-	-	-	1	5	23
07:15	07:30	-	-	-	-	4	-	-	-	-	-	4	-	8	27
07:30	07:45	-	-	-	-	4	-	-	-	-	-	2	-	6	26
07:45	08:00	-	-	-	-	7	-	-	-	-	-	3	-	10	29
08:00	08:15	-	-	-	-	4	-	-	-	-	-	6	-	10	34
08:15	08:30	1	-	-	1	6	-	-	-	-	-	3	-	11	37
08:30	08:45	-	-	-	-	6	-	-	-	-	-	3	-	9	40
08:45	09:00	-	-	-	-	9	-	1	-	-	1	2	-	13	43
09:00	09:15	1	-	-	-	4	-	-	-	1	-	3	1	10	
09:15	09:30	-	-	-	-	10	-	-	-	-	-	2	1	13	
09:30	09:45	-	-	-	-	8	-	-	-	-	-	6	1	15	
09:45	10:00	2	-	-	-	2	-	-	-	-	-	4	-	8	46
10:00	10:15	-	-	-	-	3	1	-	-	-	-	5	-	9	45
10:15	10:30	-	-	-	-	9	-	-	-	-	-	5	-	14	46
10:30	10:45	1	-	-	1	4	-	-	-	-	-	4	1	11	42
10:45	11:00	-	-	-	-	5	1	-	-	-	-	7	-	13	47
11:00	11:15	1	-	-	-	3	1	-	1	-	-	2	-	8	46
11:15	11:30	1	-	-	-	13	-	1	-	-	-	6	1	22	54
11:30	11:45	-	-	-	-	6	-	-	-	-	-	8	1	15	58
11:45	12:00	-	-	-	-	5	-	-	-	-	-	2	-	7	52
12:00	12:15	-	-	-	-	6	-	2	-	-	-	6	-	14	58
12:15	12:30	-	-	-	-	6	-	-	-	-	-	3	-	9	45
12:30	12:45	-	-	-	-	6	1	1	-	-	-	6	1	15	45
12:45	13:00	-	-	-	-	7	-	-	-	-	1	3	-	11	49
13:00	13:15	-	-	-	-	2	-	-	-	-	-	1	-	3	38
13:15	13:30	-	-	-	-	3	-	-	-	1	-	8	-	12	41
13:30	13:45	-	-	-	1	9	-	-	-	-	-	1	-	11	37
13:45	14:00	-	-	-	-	10	-	-	-	-	-	6	-	16	42
14:00	14:15	-	-	-	-	7	-	-	-	-	-	7	-	14	53
14:15	14:30	-	-	-	-	7	-	-	-	-	-	3	-	10	51
14:30	14:45	1	-	-	-	11	-	-	-	-	-	1	-	13	53
14:45	15:00	-	-	-	-	9	-	-	-	1	-	6	-	16	53
15:00	15:15	-	-	-	-	7	-	-	-	-	-	7	-	14	
15:15	15:30	-	-	-	-	4	-	-	-	-	-	3	-	7	
15:30	15:45	-	-	-	-	6	-	-	-	-	-	3	-	9	
15:45	16:00	-	-	-	-	5	-	-	-	-	-	7	-	12	42
16:00	16:15	-	-	-	-	7	-	-	-	1	-	3	-	11	39
16:15	16:30	-	-	-	-	6	-	-	-	-	-	3	-	9	41
16:30	16:45	-	-	-	-	6	-	-	-	1	-	5	-	12	44
16:45	17:00	-	-	-	-	6	-	-	-	-	-	2	-	8	40
17:00	17:15	-	-	-	-	7	-	-	-	-	-	4	-	11	40
17:15	17:30	-	-	-	-	3	-	-	-	-	1	2	-	6	37
17:30	17:45	-	-	-	-	4	-	-	-	1	-	2	-	7	32
17:45	18:00	-	-	-	-	6	-	-	-	-	-	1	-	7	31
18:00	18:15	-	-	-	-	1	-	-	-	-	-	2	-	3	
18:15	18:30	-	-	-	-	2	-	1	-	-	-	2	-	5	
18:30	18:45	-	-	-	-	2	-	-	-	-	-	-	-	2	
18:45	19:00	-	-	-	-	2	1	1	-	-	-	-	-	4	14
19:00	19:15	-	-	-	-	1	1	-	-	-	-	2	-	4	15
19:15	19:30	-	-	-	-	2	-	-	-	-	-	-	-	2	12
19:30	19:45	-	-	-	-	-	-	-	-	-	-	3	-	3	13
19:45	20:00	-	-	-	1	3	-	-	-	-	-	2	-	6	15
20:00	20:15	-	-	-	-	1	-	-	-	-	-	1	-	2	13
20:15	20:30	1	-	-	-	1	-	-	-	-	-	2	-	4	15
20:30	20:45	-	-	-	-	4	-	-	-	-	-	-	-	4	16
20:45	21:00	-	-	-	-	5	-	-	-	-	-	-	-	5	15
21:00	21:15	-	-	-	-	1	-	-	-	-	-	1	-	2	15
21:15	21:30	-	-	-	-	3	-	-	-	-	-	1	-	4	15
21:30	21:45	-	-	-	-	3	-	-	-	-	-	2	-	5	16
21:45	22:00	-	-	-	-	3	-	-	-	-	-	2	-	5	16
TOTAL		11	-	-	4	319	6	8	1	7	3	199	8	566	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	7	-	-	-	-	-	4	-	11	MORNING PEAK
05:00	06:00	-	-	-	-	0.58	-	-	-	-	-	0.50	-	0.69	MORNING PHF
08:00	09:00	1	-	-	1	25	-	1	-	-	1	14	-	43	AM PEAK
08:00	09:00	0.25	-	-	0.25	0.69	-	0.25	-	-	0.25	0.58	-	0.83	AM PHF
10:45	11:45	2	-	-	-	27	2	1	1	-	-	23	2	58	MID PEAK
10:45	11:45	0.50	-	-	-	0.52	0.50	0.04	0.25	-	-	0.72	0.50	0.66	MID PHF
15:45	16:45	-	-	-	-	24	-	-	-	2	-	18	-	44	PM PEAK
15:45	16:45	-	-	-	-	0.86	-	-	-	0.50	-	0.64	-	0.92	PM PHF
19:45	20:45	1	-	-	1	9	-	-	-	-	-	5	-	16	NIGHT PEAK
19:45	20:45	0.25	-	-	0.25	0.56	-	-	-	-	-	0.62	-	0.67	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	7	-	-	-	-	-	4	-	11	MORNING TOTAL
06:00	09:00	3	-	-	1	56	-	2	-	1	1	28	1	93	AM TOTAL
09:00	15:00	7	-	-	2	155	4	4	1	3	1	105	7	289	MID TOTAL
15:00	18:00	-	-	-	-	67	-	-	-	3	1	42	-	113	PM TOTAL
18:00	22:00	1	-	-	1	34	2	2	-	-	-	20	-	60	NIGHT TOTAL

LOCATION	KING SHAKA INTERNATIONAL AIRPORT	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD & UNKNOWN RD				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P5	DATA:	D.L	TYPE:	4W-17H-05-22-C

OVERVIEW MAP & VIDEO FRAME

JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND

DUBE BLVD

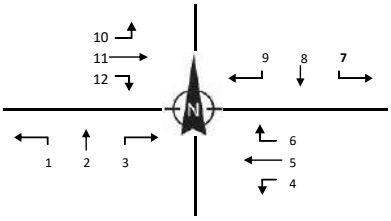
NORTHERN APPROACH / SOUTHBOUND

UNKNOWN RD

SOUTHERN APPROACH / NORTHBOUND

EASTERN APPROACH / WESTBOUND

DUBE BLVD



TOTAL VEHICLES SUMMARY

	NIGHT	PM	MID	AM	MORNING
10	2	21	12	19	35
11	450	491	435	551	104
12	0	0	0	0	0

	NIGHT	PM	MID	AM	MORNING
9	5	0	228		
8	7	0	235		
7	14	0	236		
	9	0	221		
	7	0	99		

	NIGHT	PM	MID	AM	MORNING
1	0	0	0		
2	0	0	0		
3	0	0	0		
MORNING	0	0	0		

	NIGHT	PM	MID	AM	MORNING
6	89	140	154	148	149
5	529	1011	577	612	397
4	0	0	0	0	0

LIGHT VEHICLES

	NIGHT	PM	MID	AM	MORNING
10	2	4	13	4	8
11	428	475	420	536	98
12	0	0	0	0	0

	NIGHT	PM	MID	AM	MORNING
9	5	0	220		
8	7	0	235		
7	13	0	237		
	8	0	221		
	7	0	97		

	NIGHT	PM	MID	AM	MORNING
1	0	0	0		
2	0	0	0		
3	0	0	0		
MORNING	0	0	0		

	NIGHT	PM	MID	AM	MORNING
6	88	140	153	143	143
5	512	974	509	584	385
4	0	0	0	0	0

MINI BUS TAXI

	NIGHT	PM	MID	AM	MORNING
10	0	0	3	21	27
11	15	6	2	10	2
12	0	0	0	0	0

	NIGHT	PM	MID	AM	MORNING
9	0	0	5		
8	0	0	0		
7	3	0	6		
	2	0	1		
	0	0	2		

	NIGHT	PM	MID	AM	MORNING
1	0	0	0		
2	0	0	0		
3	0	0	0		
MORNING	0	0	0		

	NIGHT	PM	MID	AM	MORNING
6	0	0	2	6	6
5	7	13	6	11	6
4	0	0	0	0	0

BUSSES

	NIGHT	PM	MID	AM	MORNING
10	0	0	0	0	0
11	2	1	0	0	0
12	0	0	0	0	0

	NIGHT	PM	MID	AM	MORNING
9	0	0	3		
8	0	0	0		
7	0	0	0		
	0	0	0		
	0	0	0		

	NIGHT	PM	MID	AM	MORNING
1	0	0	0		
2	0	0	0		
3	0	0	0		
MORNING	0	0	0		

	NIGHT	PM	MID	AM	MORNING
6	1	0	1	0	0
5	1	3	4	1	0
4	0	0	0	0	0

HEAVY VEHICLES

	NIGHT	PM	MID	AM	MORNING
10	0	0	0	0	0
11	8	20	24	15	4
12	0	0	24	0	0

	NIGHT	PM	MID	AM	MORNING
9	0	0	1		
8	1	0	2		
7	0	0	0		
	0	0	1		
	0	0	0		

	NIGHT	PM	MID	AM	MORNING
1	0	0	0		
2	0	0	0		
3	0	0	0		
MORNING	0	0	0		

	NIGHT	PM	MID	AM	MORNING
6	1	0	0	0	0
5	24	24	33	26	6
4	0	0	0	0	0

LOCATION	IG SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD & UNKNOWN RD		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P5	DATA: D.L	TYPE: 4W-17H-05-22-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	94	22	16	-	-	3	16	-	151	151
05:15	05:30	-	-	-	-	100	55	24	-	2	8	30	-	219	370
05:30	05:45	-	-	-	-	104	37	32	-	1	13	22	-	209	579
05:45	06:00	-	-	-	-	99	35	27	-	4	11	36	-	212	791
06:00	06:15	-	-	-	-	113	21	39	-	3	6	68	-	250	
06:15	06:30	-	-	-	-	126	25	30	-	2	5	92	-	280	
06:30	06:45	-	-	-	-	159	41	46	-	-	8	103	-	357	
06:45	07:00	-	-	-	-	160	39	46	-	-	7	108	-	360	1247
07:00	07:15	-	-	-	-	164	38	57	-	3	4	152	-	418	1415
07:15	07:30	-	-	-	-	136	34	70	-	2	4	173	-	419	1554
07:30	07:45	-	-	-	-	152	37	48	-	4	4	118	-	363	1560
07:45	08:00	-	-	-	-	142	32	32	-	1	3	79	-	289	1489
08:00	08:15	-	-	-	-	147	30	70	-	2	2	94	-	345	1416
08:15	08:30	-	-	-	-	141	34	76	-	3	3	93	-	350	1347
08:30	08:45	-	-	-	-	97	22	93	-	7	4	101	-	324	1308
08:45	09:00	-	-	-	-	123	27	63	-	4	2	61	-	280	1299
09:00	09:15	-	-	-	-	90	23	29	-	-	1	50	-	193	
09:15	09:30	-	-	-	-	117	26	31	-	1	2	58	-	235	
09:30	09:45	-	-	-	-	100	25	30	-	-	3	59	-	217	
09:45	10:00	-	-	-	-	97	20	55	-	2	2	71	-	247	892
10:00	10:15	-	-	-	-	94	14	38	-	4	3	70	-	223	922
10:15	10:30	-	-	-	-	122	16	33	-	4	2	50	-	227	914
10:30	10:45	-	-	-	-	131	17	29	-	5	-	55	-	237	934
10:45	11:00	-	-	-	-	124	23	48	-	1	6	72	-	274	961
11:00	11:15	-	-	-	-	107	19	59	-	1	1	72	-	259	997
11:15	11:30	-	-	-	-	122	22	37	-	2	-	85	-	268	1038
11:30	11:45	-	-	-	-	110	28	45	-	2	5	81	-	271	1072
11:45	12:00	-	-	-	-	117	23	49	-	1	1	73	-	264	1062
12:00	12:15	-	-	-	-	116	30	36	-	4	7	102	-	295	1098
12:15	12:30	-	-	-	-	118	33	42	-	1	3	49	-	246	1076
12:30	12:45	-	-	-	-	119	40	57	-	4	4	80	-	304	1109
12:45	13:00	-	-	-	-	120	30	60	-	8	4	99	-	321	1166
13:00	13:15	-	-	-	-	116	45	63	-	2	4	62	-	292	1163
13:15	13:30	-	-	-	-	147	34	53	-	5	-	82	-	321	1238
13:30	13:45	-	-	-	-	111	30	55	-	4	5	91	-	296	1230
13:45	14:00	-	-	-	-	152	43	38	-	3	4	97	-	337	1246
14:00	14:15	-	-	-	-	158	49	83	-	4	1	117	-	412	1366
14:15	14:30	-	-	-	-	127	32	65	-	2	6	138	-	370	1415
14:30	14:45	-	-	-	-	129	30	50	-	5	1	83	-	298	1417
14:45	15:00	-	-	-	-	107	37	26	-	2	-	85	-	257	1337
15:00	15:15	-	-	-	-	124	32	50	-	5	3	133	-	347	
15:15	15:30	-	-	-	-	119	34	49	-	8	-	116	-	326	
15:30	15:45	-	-	-	-	124	27	35	-	2	2	71	-	261	
15:45	16:00	-	-	-	-	143	38	49	-	1	1	101	-	333	1267
16:00	16:15	-	-	-	-	187	39	54	-	3	3	103	-	389	1309
16:15	16:30	-	-	-	-	193	40	38	-	1	1	108	-	381	1364
16:30	16:45	-	-	-	-	251	64	65	-	3	2	122	-	507	1610
16:45	17:00	-	-	-	-	256	32	41	-	3	3	91	-	426	1703
17:00	17:15	-	-	-	-	225	33	33	-	3	8	83	-	385	1699
17:15	17:30	-	-	-	-	228	29	31	-	-	6	63	-	357	1675
17:30	17:45	-	-	-	-	258	38	67	-	3	4	119	-	489	1657
17:45	18:00	-	-	-	-	300	40	104	-	1	3	226	-	674	1905
18:00	18:15	-	-	-	-	170	16	104	-	-	-	206	-	496	
18:15	18:30	-	-	-	-	126	24	55	-	3	2	129	-	339	
18:30	18:45	-	-	-	-	109	19	31	-	1	-	52	-	212	
18:45	19:00	-	-	-	-	124	30	38	-	1	-	63	-	256	1303
19:00	19:15	-	-	-	-	104	20	63	-	3	1	129	-	320	1127
19:15	19:30	-	-	-	-	98	19	69	-	2	1	109	-	298	1086
19:30	19:45	-	-	-	-	83	23	73	-	1	4	93	-	277	1151
19:45	20:00	-	-	-	-	91	9	45	-	2	-	67	-	214	1109
20:00	20:15	-	-	-	-	68	11	30	-	1	-	65	-	175	964
20:15	20:30	-	-	-	-	59	8	33	-	5	1	54	-	160	826
20:30	20:45	-	-	-	-	38	-	55	-	-	-	112	-	205	754
20:45	21:00	-	-	-	-	27	3	24	-	-	-	55	-	109	649
21:00	21:15	-	-	-	-	18	1	12	-	3	3	28	-	65	539
21:15	21:30	-	-	-	-	20	3	7	-	-	-	18	-	48	427
21:30	21:45	-	-	-	-	20	1	7	-	-	1	18	-	47	269
21:45	22:00	-	-	-	-	11	-	5	-	3	-	10	-	29	189
TOTAL		-	-	-	-	8 482	1 851	3 147	-	163	201	5 771	-	19 615	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	397	149	99	-	7	35	104	-	791	MORNING PEAK
05:00	06:00	-	-	-	-	0.95	0.68	0.77	-	0.44	0.67	0.72	-	0.90	MORNING PHF
06:45	07:45	-	-	-	-	612	148	221	-	9	19	551	-	1 560	AM PEAK
06:45	07:45	-	-	-	-	0.93	0.95	0.79	-	0.56	0.68	0.80	-	0.93	AM PHF
13:45	14:45	-	-	-	-	577	154	236	-	14	12	435	-	1 428	MID PEAK
13:45	14:45	-	-	-	-	0.88	0.79	0.46	-	0.70	0.50	0.79	-	0.86	MID PHF
17:00	18:00	-	-	-	-	1 011	140	235	-	7	21	491	-	1 905	PM PEAK
17:00	18:00	-	-	-	-	0.86	0.88	0.20	-	0.58	0.66	0.54	-	0.71	PM PHF
18:00	19:00	-	-	-	-	529	89	228	-	5	2	450	-	1 303	NIGHT PEAK
18:00	19:00	-	-	-	-	0.86	0.74	0.46	-	0.42	0.25	0.55	-	0.66	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	397	149	99	-	7	35	104	-	791	MORNING TOTAL
06:00	09:00	-	-	-	-	1 660	380	670	-	31	52	1 242	-	4 035	AM TOTAL
09:00	15:00	-	-	-	-	2 851	689	1 111	-	67	65	1 881	-	6 664	MID TOTAL
15:00	18:00	-	-	-	-	2 408	446	616	-	33	36	1 336	-	4 875	PM TOTAL
18:00	22:00	-	-	-	-	1 166	187	651	-	25	13	1 208	-	3 250	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD & UNKNOWN RD		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P5	DATA: D.L	TYPE: 4W-17H-05-22-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	94	20	16	-	-	-	16	-	146	146
05:15	05:30	-	-	-	-	99	53	24	-	2	2	27	-	207	353
05:30	05:45	-	-	-	-	98	35	31	-	1	2	21	-	188	541
05:45	06:00	-	-	-	-	94	35	26	-	4	4	34	-	197	738
06:00	06:15	-	-	-	-	112	20	39	-	3	1	64	-	239	
06:15	06:30	-	-	-	-	123	23	29	-	1	-	86	-	262	
06:30	06:45	-	-	-	-	149	39	46	-	-	1	100	-	335	
06:45	07:00	-	-	-	-	153	37	46	-	-	1	106	-	343	1179
07:00	07:15	-	-	-	-	156	38	57	-	2	1	150	-	404	1344
07:15	07:30	-	-	-	-	129	33	70	-	2	2	166	-	402	1484
07:30	07:45	-	-	-	-	146	35	48	-	4	-	114	-	347	1496
07:45	08:00	-	-	-	-	134	31	32	-	1	1	74	-	273	1426
08:00	08:15	-	-	-	-	139	30	69	-	2	1	87	-	328	1350
08:15	08:30	-	-	-	-	134	34	74	-	3	1	90	-	336	1284
08:30	08:45	-	-	-	-	90	21	93	-	7	3	97	-	311	1248
08:45	09:00	-	-	-	-	115	27	63	-	4	2	56	-	267	1242
09:00	09:15	-	-	-	-	85	22	29	-	-	1	45	-	182	
09:15	09:30	-	-	-	-	106	26	31	-	1	2	54	-	220	
09:30	09:45	-	-	-	-	90	24	30	-	-	3	52	-	199	
09:45	10:00	-	-	-	-	92	19	53	-	2	2	67	-	235	836
10:00	10:15	-	-	-	-	90	14	37	-	4	3	62	-	210	864
10:15	10:30	-	-	-	-	112	16	33	-	4	2	43	-	210	854
10:30	10:45	-	-	-	-	123	15	29	-	5	-	50	-	222	877
10:45	11:00	-	-	-	-	114	22	48	-	1	4	65	-	254	896
11:00	11:15	-	-	-	-	101	19	58	-	1	-	68	-	247	933
11:15	11:30	-	-	-	-	109	22	36	-	2	-	78	-	247	970
11:30	11:45	-	-	-	-	101	27	45	-	2	3	72	-	250	998
11:45	12:00	-	-	-	-	110	21	48	-	1	-	70	-	250	994
12:00	12:15	-	-	-	-	110	30	36	-	3	5	95	-	279	1026
12:15	12:30	-	-	-	-	111	33	42	-	-	1	46	-	233	1012
12:30	12:45	-	-	-	-	110	40	55	-	3	3	73	-	284	1046
12:45	13:00	-	-	-	-	114	28	59	-	7	4	96	-	308	1104
13:00	13:15	-	-	-	-	113	43	59	-	2	3	58	-	278	1103
13:15	13:30	-	-	-	-	138	34	52	-	5	-	73	-	302	1172
13:30	13:45	-	-	-	-	102	30	54	-	4	4	87	-	281	1169
13:45	14:00	-	-	-	-	138	42	36	-	3	3	91	-	313	1174
14:00	14:15	-	-	-	-	150	49	82	-	4	1	107	-	393	1289
14:15	14:30	-	-	-	-	119	32	65	-	2	5	135	-	358	1345
14:30	14:45	-	-	-	-	116	30	49	-	5	1	78	-	279	1343
14:45	15:00	-	-	-	-	97	37	26	-	2	-	78	-	240	1270
15:00	15:15	-	-	-	-	116	30	49	-	5	3	124	-	327	
15:15	15:30	-	-	-	-	114	34	45	-	7	-	112	-	312	
15:30	15:45	-	-	-	-	113	27	34	-	1	1	66	-	242	
15:45	16:00	-	-	-	-	131	37	48	-	1	1	91	-	309	1190
16:00	16:15	-	-	-	-	176	39	53	-	3	3	99	-	373	1236
16:15	16:30	-	-	-	-	184	40	37	-	1	-	103	-	365	1289
16:30	16:45	-	-	-	-	242	63	65	-	3	1	116	-	490	1537
16:45	17:00	-	-	-	-	248	32	39	-	2	2	89	-	412	1640
17:00	17:15	-	-	-	-	215	33	33	-	3	3	77	-	364	1631
17:15	17:30	-	-	-	-	224	29	31	-	-	1	60	-	345	1611
17:30	17:45	-	-	-	-	249	38	67	-	3	-	115	-	472	1593
17:45	18:00	-	-	-	-	286	40	104	-	1	-	223	-	654	1835
18:00	18:15	-	-	-	-	168	16	100	-	-	-	195	-	479	
18:15	18:30	-	-	-	-	120	24	51	-	3	2	120	-	320	
18:30	18:45	-	-	-	-	106	19	31	-	1	-	51	-	208	
18:45	19:00	-	-	-	-	118	29	38	-	1	-	62	-	248	1255
19:00	19:15	-	-	-	-	103	20	62	-	3	1	127	-	316	1092
19:15	19:30	-	-	-	-	95	18	69	-	2	1	108	-	293	1065
19:30	19:45	-	-	-	-	80	22	71	-	1	3	89	-	266	1123
19:45	20:00	-	-	-	-	86	9	45	-	2	-	65	-	207	1082
20:00	20:15	-	-	-	-	68	11	28	-	1	-	62	-	170	936
20:15	20:30	-	-	-	-	57	7	33	-	5	-	51	-	153	796
20:30	20:45	-	-	-	-	35	-	54	-	-	-	112	-	201	731
20:45	21:00	-	-	-	-	20	3	24	-	-	-	55	-	102	626
21:00	21:15	-	-	-	-	16	1	10	-	3	3	26	-	59	515
21:15	21:30	-	-	-	-	17	3	7	-	-	-	17	-	44	406
21:30	21:45	-	-	-	-	15	1	7	-	-	1	16	-	40	245
21:45	22:00	-	-	-	-	10	-	5	-	3	-	8	-	26	169
TOTAL		-	-	-	-	8 028	1 811	3 095	-	154	98	5 470	-	18 656	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	385	143	97	-	7	8	98	-	738	MORNING PEAK
05:00	06:00	-	-	-	-	0.97	0.67	0.78	-	0.44	0.50	0.72	-	0.89	MORNING PHF
06:45	07:45	-	-	-	-	584	143	221	-	8	4	536	-	1 496	AM PEAK
06:45	07:45	-	-	-	-	0.94	0.94	0.79	-	0.50	0.50	0.81	-	0.93	AM PHF
13:30	14:30	-	-	-	-	509	153	237	-	13	13	420	-	1 345	MID PEAK
13:30	14:30	-	-	-	-	0.85	0.78	0.50	-	0.81	0.65	0.78	-	0.86	MID PHF
17:00	18:00	-	-	-	-	974	140	235	-	7	4	475	-	1 835	PM PEAK
17:00	18:00	-	-	-	-	0.85	0.88	0.21	-	0.58	0.33	0.53	-	0.70	PM PHF
18:00	19:00	-	-	-	-	512	88	220	-	5	2	428	-	1 255	NIGHT PEAK
18:00	19:00	-	-	-	-	0.84	0.76	0.47	-	0.42	0.25	0.55	-	0.66	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	385	143	97	-	7	8	98	-	738	MORNING TOTAL
06:00	09:00	-	-	-	-	1 580	368	666	-	29	14	1 190	-	3 847	AM TOTAL
09:00	15:00	-	-	-	-	2 651	675	1 092	-	63	50	1 743	-	6 274	MID TOTAL
15:00	18:00	-	-	-	-	2 298	442	605	-	30	15	1 275	-	4 665	PM TOTAL
18:00	22:00	-	-	-	-	1 114	183	635	-	25	11	1 164	-	3 132	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD & UNKNOWN RD				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P5	DATA: D.L	TYPE:	4W-17H-05-22-C	

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	2	-	-	-	3	-	-	5	5
05:15	05:30	-	-	-	-	-	2	-	-	-	6	1	-	9	14
05:30	05:45	-	-	-	-	3	2	1	-	-	11	-	-	17	31
05:45	06:00	-	-	-	-	3	-	1	-	-	7	1	-	12	43
06:00	06:15	-	-	-	-	1	1	-	-	-	5	1	-	8	
06:15	06:30	-	-	-	-	-	2	1	-	1	5	6	-	15	
06:30	06:45	-	-	-	-	5	2	-	-	-	7	1	-	15	
06:45	07:00	-	-	-	-	3	2	-	-	-	6	1	-	12	50
07:00	07:15	-	-	-	-	3	-	-	-	1	3	2	-	9	51
07:15	07:30	-	-	-	-	3	1	-	-	-	2	3	-	9	45
07:30	07:45	-	-	-	-	1	1	-	-	-	4	2	-	8	38
07:45	08:00	-	-	-	-	1	1	-	-	-	2	2	-	6	32
08:00	08:15	-	-	-	-	3	-	1	-	-	1	1	-	6	29
08:15	08:30	-	-	-	-	1	-	1	-	-	2	-	-	4	24
08:30	08:45	-	-	-	-	-	1	-	-	-	1	1	-	3	19
08:45	09:00	-	-	-	-	-	-	-	-	-	-	2	-	2	15
09:00	09:15	-	-	-	-	-	1	-	-	-	-	1	-	2	
09:15	09:30	-	-	-	-	1	-	-	-	-	-	1	-	2	
09:30	09:45	-	-	-	-	3	-	-	-	-	-	-	-	3	
09:45	10:00	-	-	-	-	2	-	1	-	-	-	-	-	3	10
10:00	10:15	-	-	-	-	-	-	-	-	-	-	4	-	4	12
10:15	10:30	-	-	-	-	1	-	-	-	-	-	2	-	3	13
10:30	10:45	-	-	-	-	2	2	-	-	-	-	1	-	5	15
10:45	11:00	-	-	-	-	3	-	-	-	-	2	-	-	5	17
11:00	11:15	-	-	-	-	2	-	-	-	-	1	2	-	5	18
11:15	11:30	-	-	-	-	1	-	-	-	-	-	-	-	1	16
11:30	11:45	-	-	-	-	3	1	-	-	-	2	-	-	6	17
11:45	12:00	-	-	-	-	2	-	1	-	-	1	1	-	5	17
12:00	12:15	-	-	-	-	1	-	-	-	-	2	-	-	3	15
12:15	12:30	-	-	-	-	1	-	-	-	-	2	-	-	3	17
12:30	12:45	-	-	-	-	2	-	-	-	-	1	-	-	3	14
12:45	13:00	-	-	-	-	1	2	1	-	-	-	-	-	4	13
13:00	13:15	-	-	-	-	1	1	3	-	-	1	-	-	6	16
13:15	13:30	-	-	-	-	1	-	1	-	-	-	-	-	2	15
13:30	13:45	-	-	-	-	2	-	-	-	-	1	2	-	5	17
13:45	14:00	-	-	-	-	2	1	2	-	-	1	-	-	6	19
14:00	14:15	-	-	-	-	2	-	1	-	-	-	1	-	4	17
14:15	14:30	-	-	-	-	-	-	-	-	-	1	-	-	1	16
14:30	14:45	-	-	-	-	-	-	1	-	-	-	3	-	4	15
14:45	15:00	-	-	-	-	2	-	-	-	-	-	-	-	2	11
15:00	15:15	-	-	-	-	-	2	1	-	-	-	2	-	5	
15:15	15:30	-	-	-	-	2	-	1	-	-	-	1	-	4	
15:30	15:45	-	-	-	-	3	-	1	-	1	1	2	-	8	
15:45	16:00	-	-	-	-	5	1	1	-	-	-	2	-	9	26
16:00	16:15	-	-	-	-	3	-	-	-	-	-	1	-	4	25
16:15	16:30	-	-	-	-	3	-	1	-	-	1	2	-	7	28
16:30	16:45	-	-	-	-	4	1	-	-	-	1	1	-	7	27
16:45	17:00	-	-	-	-	2	-	1	-	1	1	-	-	5	23
17:00	17:15	-	-	-	-	2	-	-	-	-	5	2	-	9	28
17:15	17:30	-	-	-	-	1	-	-	-	-	5	1	-	7	28
17:30	17:45	-	-	-	-	1	-	-	-	-	4	2	-	7	28
17:45	18:00	-	-	-	-	9	-	-	-	-	3	1	-	13	36
18:00	18:15	-	-	-	-	1	-	4	-	-	-	7	-	12	
18:15	18:30	-	-	-	-	3	-	1	-	-	-	6	-	10	
18:30	18:45	-	-	-	-	1	-	-	-	-	-	1	-	2	
18:45	19:00	-	-	-	-	2	-	-	-	-	-	1	-	3	27
19:00	19:15	-	-	-	-	-	-	-	-	-	-	-	-	-	15
19:15	19:30	-	-	-	-	-	1	-	-	-	-	1	-	2	7
19:30	19:45	-	-	-	-	2	-	1	-	-	1	-	-	4	9
19:45	20:00	-	-	-	-	1	-	-	-	-	-	-	-	1	7
20:00	20:15	-	-	-	-	-	-	2	-	-	-	1	-	3	10
20:15	20:30	-	-	-	-	-	1	-	-	-	1	1	-	3	11
20:30	20:45	-	-	-	-	-	-	1	-	-	-	-	-	1	8
20:45	21:00	-	-	-	-	2	-	-	-	-	-	-	-	2	9
21:00	21:15	-	-	-	-	-	-	2	-	-	-	1	-	3	9
21:15	21:30	-	-	-	-	1	-	-	-	-	-	-	-	1	7
21:30	21:45	-	-	-	-	-	-	-	-	-	-	-	-	-	6
21:45	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	4
TOTAL		-	-	-	-	110	31	33	-	4	103	78	-	359	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	6	6	2	-	-	27	2	-	43	MORNING PEAK
05:00	06:00	-	-	-	-	0.50	0.75	0.50	-	-	0.61	0.50	-	0.63	MORNING PHF
06:15	07:15	-	-	-	-	11	6	1	-	2	21	10	-	51	AM PEAK
06:15	07:15	-	-	-	-	0.55	0.75	0.25	-	0.50	0.75	0.42	-	0.85	AM PHF
13:00	14:00	-	-	-	-	6	2	6	-	-	3	2	-	19	MID PEAK
13:00	14:00	-	-	-	-	0.75	0.50	0.50	-	-	0.75	0.25	-	0.79	MID PHF
17:00	18:00	-	-	-	-	13	-	-	-	-	17	6	-	36	PM PEAK
17:00	18:00	-	-	-	-	0.36	-	-	-	-	0.85	0.75	-	0.69	PM PHF
18:00	19:00	-	-	-	-	7	-	5	-	-	-	15	-	27	NIGHT PEAK
18:00	19:00	-	-	-	-	0.58	-	0.31	-	-	-	0.54	-	0.56	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	6	6	2	-	-	27	2	-	43	MORNING TOTAL
06:00	09:00	-	-	-	-	21	11	3	-	2	38	22	-	97	AM TOTAL
09:00	15:00	-	-	-	-	35	8	11	-	-	15	18	-	87	MID TOTAL
15:00	18:00	-	-	-	-	35	4	6	-	2	21	17	-	85	PM TOTAL
18:00	22:00	-	-	-	-	13	2	11	-	-	2	19	-	47	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD & UNKNOWN RD				
SURVEY DATE:	Tuesday, 29 October 2024						
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P5	DATA: D.L	TYPE:	4W-17H-05-22-C	

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:15	05:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:30	05:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:45	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:30	07:45	-	-	-	-	1	-	-	-	-	-	-	-	1	1
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	1	-	1	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	1	-	1	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	1	-	-	-	-	-	-	-	1	3
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
10:30	10:45	-	-	-	-	2	-	-	-	-	-	-	-	2	3
10:45	11:00	-	-	-	-	1	1	-	-	-	-	-	-	2	4
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	4
11:15	11:30	-	-	-	-	1	-	-	-	-	-	-	-	1	5
11:30	11:45	-	-	-	-	-	-	-	-	-	-	1	-	1	4
11:45	12:00	-	-	-	-	-	2	-	-	-	-	-	-	2	4
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	4
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	3	-	3	3
13:15	13:30	-	-	-	-	-	-	-	-	-	-	1	-	1	4
13:30	13:45	-	-	-	-	-	-	1	-	-	-	-	-	1	5
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	5
14:00	14:15	-	-	-	-	-	-	-	-	-	-	1	-	1	3
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
14:30	14:45	-	-	-	-	-	-	-	-	-	-	1	-	1	2
14:45	15:00	-	-	-	-	1	-	-	-	-	-	1	-	2	4
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	1	-	-	-	-	-	1	
15:30	15:45	-	-	-	-	1	-	-	-	-	-	-	-	1	
15:45	16:00	-	-	-	-	1	-	-	-	-	-	1	-	2	4
16:00	16:15	-	-	-	-	1	-	1	-	-	-	-	-	2	6
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	5
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	4
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:15	17:30	-	-	-	-	1	-	-	-	-	-	-	-	1	1
17:30	17:45	-	-	-	-	2	-	-	-	-	-	-	-	2	3
17:45	18:00	-	-	-	-	-	-	-	-	-	-	1	-	1	4
18:00	18:15	-	-	-	-	-	-	-	-	-	-	2	-	2	
18:15	18:30	-	-	-	-	-	-	3	-	-	-	-	-	3	
18:30	18:45	-	-	-	-	1	-	-	-	-	-	-	-	1	
18:45	19:00	-	-	-	-	-	1	-	-	-	-	-	-	1	7
19:00	19:15	-	-	-	-	-	-	-	-	-	-	-	-	-	5
19:15	19:30	-	-	-	-	1	-	-	-	-	-	-	-	1	3
19:30	19:45	-	-	-	-	-	-	1	-	-	-	-	-	1	3
19:45	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
20:00	20:15	-	-	-	-	-	-	-	-	-	-	1	-	1	3
20:15	20:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
20:30	20:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
20:45	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
21:00	21:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:15	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:30	21:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21:45	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		-	-	-	-	15	4	7	-	-	-	15	-	41	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
00:00	00:30	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING PEAK
00:00	00:30	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING PHF
06:45	07:45	-	-	-	-	1	-	-	-	-	-	-	-	1	AM PEAK
06:45	07:45	-	-	-	-	0.25	-	-	-	-	-	-	-	0.25	AM PHF
10:30	11:30	-	-	-	-	4	1	-	-	-	-	-	-	5	MID PEAK
10:30	11:30	-	-	-	-	0.50	0.25	-	-	-	-	-	-	0.63	MID PHF
15:15	16:15	-	-	-	-	3	-	2	-	-	-	1	-	6	PM PEAK
15:15	16:15	-	-	-	-	0.75	-	0.50	-	-	-	0.25	-	0.75	PM PHF
18:00	19:00	-	-	-	-	1	1	3	-	-	-	2	-	7	NIGHT PEAK
18:00	19:00	-	-	-	-	0.25	0.25	0.25	-	-	-	0.25	-	0.58	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	MORNING TOTAL
06:00	09:00	-	-	-	-	1	-	-	-	-	-	-	-	1	AM TOTAL
09:00	15:00	-	-	-	-	6	3	1	-	-	-	10	-	20	MID TOTAL
15:00	18:00	-	-	-	-	6	-	2	-	-	-	2	-	10	PM TOTAL
18:00	22:00	-	-	-	-	2	1	4	-	-	-	3	-	10	NIGHT TOTAL

LOCATION	G SHAKA INTERNATIONAL AIRPO	PROJECT TITLE:	KING SHAKA INTERNATIONAL AIRPORT-TRAFFIC COUNT		
PROJECT NR:	UT2024-3261	INTERSECTION:	DUBE BLVD & UNKNOWN RD		
SURVEY DATE:	Tuesday, 29 October 2024				
SURVEY TIMES:	05H00-22H00	KMZ FILE NR:	P5	DATA: D.L	TYPE: 4W-17H-05-22-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
05:00	05:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
05:15	05:30	-	-	-	-	1	-	-	-	-	-	2	-	3	3
05:30	05:45	-	-	-	-	3	-	-	-	-	-	1	-	4	7
05:45	06:00	-	-	-	-	2	-	-	-	-	-	1	-	3	10
06:00	06:15	-	-	-	-	-	-	-	-	-	-	3	-	3	
06:15	06:30	-	-	-	-	3	-	-	-	-	-	-	-	3	
06:30	06:45	-	-	-	-	5	-	-	-	-	-	2	-	7	
06:45	07:00	-	-	-	-	4	-	-	-	-	-	1	-	5	18
07:00	07:15	-	-	-	-	5	-	-	-	-	-	-	-	5	20
07:15	07:30	-	-	-	-	4	-	-	-	-	-	4	-	8	25
07:30	07:45	-	-	-	-	4	1	-	-	-	-	2	-	7	25
07:45	08:00	-	-	-	-	7	-	-	-	-	-	3	-	10	30
08:00	08:15	-	-	-	-	5	-	-	-	-	-	6	-	11	36
08:15	08:30	-	-	-	-	6	-	1	-	-	-	3	-	10	38
08:30	08:45	-	-	-	-	7	-	-	-	-	-	3	-	10	41
08:45	09:00	-	-	-	-	8	-	-	-	-	-	3	-	11	42
09:00	09:15	-	-	-	-	5	-	-	-	-	-	3	-	8	
09:15	09:30	-	-	-	-	10	-	-	-	-	-	2	-	12	
09:30	09:45	-	-	-	-	7	1	-	-	-	-	7	-	15	
09:45	10:00	-	-	-	-	2	1	1	-	-	-	4	-	8	43
10:00	10:15	-	-	-	-	4	-	1	-	-	-	4	-	9	44
10:15	10:30	-	-	-	-	9	-	-	-	-	-	5	-	14	46
10:30	10:45	-	-	-	-	4	-	-	-	-	-	4	-	8	39
10:45	11:00	-	-	-	-	6	-	-	-	-	-	7	-	13	44
11:00	11:15	-	-	-	-	4	-	1	-	-	-	2	-	7	42
11:15	11:30	-	-	-	-	11	-	1	-	-	-	7	-	19	47
11:30	11:45	-	-	-	-	6	-	-	-	-	-	8	-	14	53
11:45	12:00	-	-	-	-	5	-	-	-	-	-	2	-	7	47
12:00	12:15	-	-	-	-	5	-	-	-	1	-	7	-	13	53
12:15	12:30	-	-	-	-	6	-	-	-	1	-	3	-	10	44
12:30	12:45	-	-	-	-	7	-	2	-	1	-	7	-	17	47
12:45	13:00	-	-	-	-	5	-	-	-	1	-	3	-	9	49
13:00	13:15	-	-	-	-	2	1	1	-	-	-	1	-	5	41
13:15	13:30	-	-	-	-	8	-	-	-	-	-	8	-	16	47
13:30	13:45	-	-	-	-	7	-	-	-	-	-	2	-	9	39
13:45	14:00	-	-	-	-	12	-	-	-	-	-	6	-	18	48
14:00	14:15	-	-	-	-	6	-	-	-	-	-	8	-	14	57
14:15	14:30	-	-	-	-	8	-	-	-	-	-	3	-	11	52
14:30	14:45	-	-	-	-	13	-	-	-	-	-	1	-	14	57
14:45	15:00	-	-	-	-	7	-	-	-	-	-	6	-	13	52
15:00	15:15	-	-	-	-	8	-	-	-	-	-	7	-	15	
15:15	15:30	-	-	-	-	3	-	2	-	1	-	3	-	9	
15:30	15:45	-	-	-	-	7	-	-	-	-	-	3	-	10	
15:45	16:00	-	-	-	-	6	-	-	-	-	-	7	-	13	47
16:00	16:15	-	-	-	-	7	-	-	-	-	-	3	-	10	42
16:15	16:30	-	-	-	-	6	-	-	-	-	-	3	-	9	42
16:30	16:45	-	-	-	-	5	-	-	-	-	-	5	-	10	42
16:45	17:00	-	-	-	-	6	-	1	-	-	-	2	-	9	38
17:00	17:15	-	-	-	-	8	-	-	-	-	-	4	-	12	40
17:15	17:30	-	-	-	-	2	-	-	-	-	-	2	-	4	35
17:30	17:45	-	-	-	-	6	-	-	-	-	-	2	-	8	33
17:45	18:00	-	-	-	-	5	-	-	-	-	-	1	-	6	30
18:00	18:15	-	-	-	-	1	-	-	-	-	-	2	-	3	
18:15	18:30	-	-	-	-	3	-	-	-	-	-	3	-	6	
18:30	18:45	-	-	-	-	1	-	-	-	-	-	-	-	1	
18:45	19:00	-	-	-	-	4	-	-	-	-	-	-	-	4	14
19:00	19:15	-	-	-	-	1	-	1	-	-	-	2	-	4	15
19:15	19:30	-	-	-	-	2	-	-	-	-	-	-	-	2	11
19:30	19:45	-	-	-	-	1	1	-	-	-	-	4	-	6	16
19:45	20:00	-	-	-	-	4	-	-	-	-	-	2	-	6	18
20:00	20:15	-	-	-	-	-	-	-	-	-	-	1	-	1	15
20:15	20:30	-	-	-	-	2	-	-	-	-	-	2	-	4	17
20:30	20:45	-	-	-	-	3	-	-	-	-	-	-	-	3	14
20:45	21:00	-	-	-	-	5	-	-	-	-	-	-	-	5	13
21:00	21:15	-	-	-	-	2	-	-	-	-	-	1	-	3	15
21:15	21:30	-	-	-	-	2	-	-	-	-	-	1	-	3	14
21:30	21:45	-	-	-	-	5	-	-	-	-	-	2	-	7	18
21:45	22:00	-	-	-	-	1	-	-	-	-	-	2	-	3	16
TOTAL		-	-	-	-	329	5	12	-	5	-	208	-	559	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	6	-	-	-	-	-	4	-	10	MORNING PEAK
05:00	06:00	-	-	-	-	0.50	-	-	-	-	-	0.50	-	0.63	MORNING PHF
08:00	09:00	-	-	-	-	26	-	1	-	-	-	15	-	42	AM PEAK
08:00	09:00	-	-	-	-	0.81	-	0.25	-	-	-	0.62	-	0.95	AM PHF
13:15	14:15	-	-	-	-	33	-	-	-	-	-	24	-	57	MID PEAK
13:15	14:15	-	-	-	-	0.69	-	-	-	-	-	0.75	-	0.79	MID PHF
15:00	16:00	-	-	-	-	24	-	2	-	1	-	20	-	47	PM PEAK
15:00	16:00	-	-	-	-	0.75	-	0.08	-	0.25	-	0.71	-	0.78	PM PHF
19:00	20:00	-	-	-	-	8	1	1	-	-	-	8	-	18	NIGHT PEAK
19:00	20:00	-	-	-	-	0.50	0.25	0.06	-	-	-	0.50	-	0.75	NIGHT PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
05:00	06:00	-	-	-	-	6	-	-	-	-	-	4	-	10	MORNING TOTAL
06:00	09:00	-	-	-	-	58	1	1	-	-	-	30	-	90	AM TOTAL
09:00	15:00	-	-	-	-	159	3	7	-	4	-	110	-	283	MID TOTAL
15:00	18:00	-	-	-	-	69	-	3	-	1	-	42	-	115	PM TOTAL
18:00	22:00	-	-	-	-	37	1	1	-	-	-	22	-	61	NIGHT TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	TN-12H-6-18-C

OVERVIEW MAP & VIDEO FRAME

JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND

R54

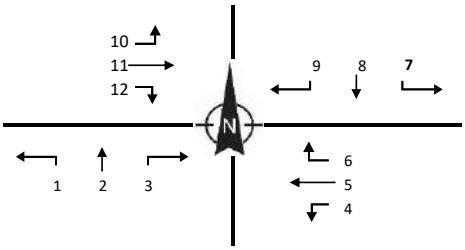
NORTHERN APPROACH / SOUTHBOUND

D1113

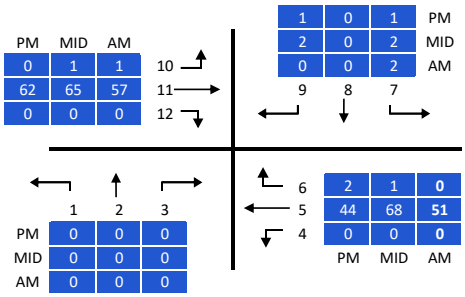
SOUTHERN APPROACH / NORTHBOUND

EASTERN APPROACH / WESTBOUND

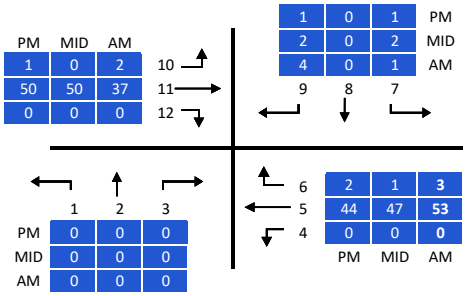
R54



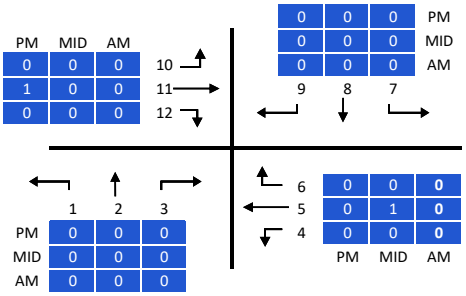
TOTAL VEHICLES SUMMARY



LIGHT VEHICLES



MINI BUS TAXI



BUSSES

HEAVY VEHICLES

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	TN-12H-6-18-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	6	1	-	-	-	-	9	-	16	
06:15	06:30	-	-	-	-	11	-	-	-	1	-	7	-	19	
06:30	06:45	-	-	-	-	12	-	-	-	-	-	9	-	21	
06:45	07:00	-	-	-	-	13	-	-	-	-	-	16	-	29	85
07:00	07:15	-	-	-	-	12	-	1	-	-	-	18	-	31	100
07:15	07:30	-	-	-	-	15	-	1	-	-	1	15	-	32	113
07:30	07:45	-	-	-	-	11	-	-	-	-	-	8	-	19	111
07:45	08:00	-	-	-	-	30	3	1	-	1	-	4	-	39	121
08:00	08:15	-	-	-	-	17	1	1	-	-	-	9	-	28	118
08:15	08:30	-	-	-	-	17	2	-	-	1	1	9	-	30	116
08:30	08:45	-	-	-	-	12	-	-	-	2	1	14	-	29	126
08:45	09:00	-	-	-	-	19	-	-	-	1	-	17	-	37	124
09:00	09:15	-	-	-	-	10	-	-	-	-	1	13	-	24	
09:15	09:30	-	-	-	-	11	-	-	-	-	-	16	-	27	
09:30	09:45	-	-	-	-	14	1	1	-	-	-	16	-	32	
09:45	10:00	-	-	-	-	18	-	-	-	-	1	6	-	25	108
10:00	10:15	-	-	-	-	15	-	2	-	-	-	6	-	23	107
10:15	10:30	-	-	-	-	14	-	-	-	1	-	9	-	24	104
10:30	10:45	-	-	-	-	14	-	-	-	-	-	18	-	32	104
10:45	11:00	-	-	-	-	20	-	1	-	-	-	12	-	33	112
11:00	11:15	-	-	-	-	17	-	-	-	-	1	10	-	28	117
11:15	11:30	-	-	-	-	13	1	-	-	-	-	17	-	31	124
11:30	11:45	-	-	-	-	20	-	-	-	-	1	18	-	39	131
11:45	12:00	-	-	-	-	11	-	-	-	-	1	8	-	20	118
12:00	12:15	-	-	-	-	8	-	-	-	-	-	24	-	32	122
12:15	12:30	-	-	-	-	19	-	1	-	-	-	14	-	34	125
12:30	12:45	-	-	-	-	19	-	-	-	-	1	16	-	36	122
12:45	13:00	-	-	-	-	16	1	1	-	1	-	15	-	34	136
13:00	13:15	-	-	-	-	14	-	-	-	1	-	20	-	35	139
13:15	13:30	-	-	-	-	9	1	-	-	-	-	13	-	23	128
13:30	13:45	-	-	-	-	12	-	-	-	-	-	13	-	25	117
13:45	14:00	-	-	-	-	16	-	-	-	-	7	8	-	31	114
14:00	14:15	-	-	-	-	8	-	1	-	-	1	18	-	28	107
14:15	14:30	-	-	-	-	10	-	1	-	1	2	17	-	31	115
14:30	14:45	-	-	-	-	16	-	-	-	-	-	13	-	29	119
14:45	15:00	-	-	-	-	14	1	-	-	1	-	20	-	36	124
15:00	15:15	-	-	-	-	17	1	-	-	1	1	14	-	34	
15:15	15:30	-	-	-	-	15	-	-	-	-	-	19	-	34	
15:30	15:45	-	-	-	-	17	1	-	-	-	-	13	-	31	
15:45	16:00	-	-	-	-	16	-	1	-	-	-	18	-	35	134
16:00	16:15	-	-	-	-	17	1	-	-	-	-	11	-	29	129
16:15	16:30	-	-	-	-	3	-	-	-	-	-	12	-	15	110
16:30	16:45	-	-	-	-	6	-	-	-	-	-	16	-	22	101
16:45	17:00	-	-	-	-	15	1	-	-	-	-	16	-	32	98
17:00	17:15	-	-	-	-	10	-	1	-	-	-	17	-	28	97
17:15	17:30	-	-	-	-	13	1	-	-	1	-	13	-	28	110
17:30	17:45	-	-	-	-	14	2	-	-	-	-	10	-	26	114
17:45	18:00	-	-	-	-	9	-	-	-	-	-	16	-	25	107
TOTAL		-	-	-	-	665	19	14	-	13	20	650	-	1 381	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	-	-	-	-	51	-	2	-	-	1	57	-	111	AM PEAK
07:45	08:45	-	-	-	-	0.63	0.50	0.50	-	0.50	0.50	0.64	-	0.81	AM PHF
12:15	13:15	-	-	-	-	68	1	2	-	2	1	65	-	139	MID PEAK
12:15	13:15	-	-	-	-	0.89	0.25	0.50	-	0.50	0.25	0.81	-	0.97	MID PHF
16:30	17:30	-	-	-	-	44	2	1	-	1	-	62	-	110	PM PEAK
15:00	16:00	-	-	-	-	0.96	0.50	0.02	-	0.25	0.25	0.84	-	0.96	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	175	7	4	-	6	3	135	-	330	AM TOTAL
09:00	15:00	-	-	-	-	338	5	8	-	5	16	340	-	712	MID TOTAL
15:00	18:00	-	-	-	-	152	7	2	-	2	1	175	-	339	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	TN-12H-6-18-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	6	1	-	-	-	-	6	-	**13**	
06:15	06:30	-	-	-	-	6	-	-	-	1	-	6	-	**13**	
06:30	06:45	-	-	-	-	9	-	-	-	-	-	5	-	**14**	
06:45	07:00	-	-	-	-	8	-	-	-	-	-	12	-	**20**	60
07:00	07:15	-	-	-	-	10	-	-	-	-	-	11	-	**21**	68
07:15	07:30	-	-	-	-	9	-	1	-	-	1	11	-	**22**	77
07:30	07:45	-	-	-	-	8	-	-	-	-	-	6	-	**14**	77
07:45	08:00	-	-	-	-	21	3	1	-	1	-	2	-	**28**	85
08:00	08:15	-	-	-	-	14	1	1	-	-	-	7	-	**23**	87
08:15	08:30	-	-	-	-	12	2	-	-	1	1	8	-	**24**	89
08:30	08:45	-	-	-	-	11	-	-	-	2	1	9	-	**23**	98
08:45	09:00	-	-	-	-	16	-	-	-	1	-	13	-	**30**	100
09:00	09:15	-	-	-	-	9	-	-	-	-	1	10	-	**20**	
09:15	09:30	-	-	-	-	8	-	-	-	-	-	12	-	**20**	
09:30	09:45	-	-	-	-	9	1	1	-	-	-	13	-	**24**	
09:45	10:00	-	-	-	-	15	-	-	-	-	1	5	-	**21**	85
10:00	10:15	-	-	-	-	13	-	2	-	-	-	4	-	**19**	84
10:15	10:30	-	-	-	-	10	-	-	-	1	-	7	-	**18**	82
10:30	10:45	-	-	-	-	11	-	-	-	-	-	15	-	**26**	84
10:45	11:00	-	-	-	-	13	-	1	-	-	-	9	-	**23**	86
11:00	11:15	-	-	-	-	13	-	-	-	-	1	7	-	**21**	88
11:15	11:30	-	-	-	-	8	-	-	-	-	-	13	-	**21**	91
11:30	11:45	-	-	-	-	15	-	-	-	-	1	13	-	**29**	94
11:45	12:00	-	-	-	-	8	-	-	-	-	1	4	-	**13**	84
12:00	12:15	-	-	-	-	4	-	-	-	-	-	15	-	**19**	82
12:15	12:30	-	-	-	-	10	-	1	-	-	-	12	-	**23**	84
12:30	12:45	-	-	-	-	16	-	-	-	-	-	12	-	**28**	83
12:45	13:00	-	-	-	-	10	1	1	-	1	-	12	-	**25**	95
13:00	13:15	-	-	-	-	11	-	-	-	1	-	14	-	**26**	102
13:15	13:30	-	-	-	-	8	1	-	-	-	-	10	-	**19**	98
13:30	13:45	-	-	-	-	9	-	-	-	-	-	9	-	**18**	88
13:45	14:00	-	-	-	-	15	-	-	-	-	3	7	-	**25**	88
14:00	14:15	-	-	-	-	3	-	1	-	-	1	12	-	**17**	79
14:15	14:30	-	-	-	-	9	-	1	-	1	2	12	-	**25**	85
14:30	14:45	-	-	-	-	13	-	-	-	-	-	10	-	**23**	90
14:45	15:00	-	-	-	-	9	-	-	-	1	-	19	-	**29**	94
15:00	15:15	-	-	-	-	12	1	-	-	1	1	12	-	**27**	
15:15	15:30	-	-	-	-	12	-	-	-	-	-	15	-	**27**	
15:30	15:45	-	-	-	-	10	1	-	-	-	-	10	-	**21**	
15:45	16:00	-	-	-	-	10	-	1	-	-	-	13	-	**24**	99
16:00	16:15	-	-	-	-	11	1	-	-	-	-	9	-	**21**	93
16:15	16:30	-	-	-	-	2	-	-	-	-	-	7	-	**9**	75
16:30	16:45	-	-	-	-	6	-	-	-	-	-	14	-	**20**	74
16:45	17:00	-	-	-	-	10	1	-	-	-	-	12	-	**23**	73
17:00	17:15	-	-	-	-	8	-	1	-	-	-	9	-	**18**	70
17:15	17:30	-	-	-	-	9	1	-	-	1	-	10	-	**21**	82
17:30	17:45	-	-	-	-	8	2	-	-	-	-	10	-	**20**	82
17:45	18:00	-	-	-	-	6	-	-	-	-	-	14	-	**20**	79
TOTAL		**-**	**-**	**-**	**-**	**483**	**17**	**13**	**-**	**13**	**15**	**487**	**-**	**1 028**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
08:00	09:00	-	-	-	-	53	3	1	-	4	2	37	-	**100**	**AM PEAK**
08:00	09:00	-	-	-	-	0.83	0.38	0.25	-	0.50	0.50	0.71	-	**0.83**	**AM PHF**
12:15	13:15	-	-	-	-	47	1	2	-	2	-	50	-	**102**	**MID PEAK**
12:15	13:15	-	-	-	-	0.73	0.25	0.50	-	0.50	-	0.89	-	**0.91**	**MID PHF**
15:00	16:00	-	-	-	-	44	2	1	-	1	1	50	-	**99**	**PM PEAK**
15:00	16:00	-	-	-	-	0.92	0.50	0.02	-	0.25	0.25	0.83	-	**0.92**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	130	7	3	-	6	3	96	-	**245**	**AM TOTAL**
09:00	15:00	-	-	-	-	249	3	8	-	5	11	256	-	**532**	**MID TOTAL**
15:00	18:00	-	-	-	-	104	7	2	-	2	1	135	-	**251**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	TN-12H-6-18-C

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	1	-	-	-	-	-	-	-	1	1
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:00	14:15	-	-	-	-	1	-	-	-	-	-	-	-	1	1
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:15	16:30	-	-	-	-	-	-	-	-	-	-	1	-	1	1
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		-	-	-	-	2	-	-	-	-	-	1	-	3	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	AM PEAK
06:00	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	AM PHF
12:15	13:15	-	-	-	-	1	-	-	-	-	-	-	-	1	MID PEAK
12:15	13:15	-	-	-	-	0.25	-	-	-	-	-	-	-	0.25	MID PHF
15:30	16:30	-	-	-	-	-	-	-	-	-	-	1	-	1	PM PEAK
15:30	16:30	-	-	-	-	-	-	-	-	-	-	0.25	-	0.25	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	AM TOTAL
09:00	15:00	-	-	-	-	2	-	-	-	-	-	-	-	2	MID TOTAL
15:00	18:00	-	-	-	-	-	-	-	-	-	-	1	-	1	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	TN-12H-6-18-C

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	1	-	-	-	-	-	-	-	1	
06:30	06:45	-	-	-	-	1	-	-	-	-	-	-	-	1	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:00	07:15	-	-	-	-	-	-	1	-	-	-	1	-	2	4
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	2	-	2	2
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:45	15:00	-	-	-	-	1	1	-	-	-	-	-	-	2	2
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	1	-	1	
15:30	15:45	-	-	-	-	2	-	-	-	-	-	-	-	2	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
16:00	16:15	-	-	-	-	-	-	-	-	-	-	1	-	1	4
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		-	-	-	-	5	1	1	-	-	-	5	-	12	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:15	07:15	-	-	-	-	2	-	1	-	-	-	1	-	4	AM PEAK
06:15	07:15	-	-	-	-	0.50	-	0.25	-	-	-	0.25	-	0.50	AM PHF
10:45	11:45	-	-	-	-	-	-	-	-	-	-	2	-	2	MID PEAK
10:45	11:45	-	-	-	-	-	-	-	-	-	-	0.25	-	0.25	MID PHF
15:15	16:15	-	-	-	-	2	-	-	-	-	-	2	-	4	PM PEAK
15:15	16:15	-	-	-	-	0.25	-	-	-	-	-	0.50	-	0.50	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	2	-	1	-	-	-	1	-	4	AM TOTAL
09:00	15:00	-	-	-	-	1	1	-	-	-	-	2	-	4	MID TOTAL
15:00	18:00	-	-	-	-	2	-	-	-	-	-	2	-	4	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	TN-12H-6-18-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	3	-	**3**	
06:15	06:30	-	-	-	-	4	-	-	-	-	-	1	-	**5**	
06:30	06:45	-	-	-	-	2	-	-	-	-	-	4	-	**6**	
06:45	07:00	-	-	-	-	5	-	-	-	-	-	4	-	**9**	23
07:00	07:15	-	-	-	-	2	-	-	-	-	-	6	-	**8**	28
07:15	07:30	-	-	-	-	6	-	-	-	-	-	4	-	**10**	33
07:30	07:45	-	-	-	-	3	-	-	-	-	-	2	-	**5**	32
07:45	08:00	-	-	-	-	9	-	-	-	-	-	2	-	**11**	34
08:00	08:15	-	-	-	-	3	-	-	-	-	-	2	-	**5**	31
08:15	08:30	-	-	-	-	5	-	-	-	-	-	1	-	**6**	27
08:30	08:45	-	-	-	-	1	-	-	-	-	-	5	-	**6**	28
08:45	09:00	-	-	-	-	3	-	-	-	-	-	4	-	**7**	24
09:00	09:15	-	-	-	-	1	-	-	-	-	-	3	-	**4**	
09:15	09:30	-	-	-	-	3	-	-	-	-	-	4	-	**7**	
09:30	09:45	-	-	-	-	5	-	-	-	-	-	3	-	**8**	
09:45	10:00	-	-	-	-	3	-	-	-	-	-	1	-	**4**	23
10:00	10:15	-	-	-	-	2	-	-	-	-	-	2	-	**4**	23
10:15	10:30	-	-	-	-	4	-	-	-	-	-	2	-	**6**	22
10:30	10:45	-	-	-	-	3	-	-	-	-	-	3	-	**6**	20
10:45	11:00	-	-	-	-	7	-	-	-	-	-	3	-	**10**	26
11:00	11:15	-	-	-	-	4	-	-	-	-	-	3	-	**7**	29
11:15	11:30	-	-	-	-	5	1	-	-	-	-	4	-	**10**	33
11:30	11:45	-	-	-	-	5	-	-	-	-	-	3	-	**8**	35
11:45	12:00	-	-	-	-	3	-	-	-	-	-	4	-	**7**	32
12:00	12:15	-	-	-	-	4	-	-	-	-	-	9	-	**13**	38
12:15	12:30	-	-	-	-	9	-	-	-	-	-	2	-	**11**	39
12:30	12:45	-	-	-	-	3	-	-	-	-	1	4	-	**8**	39
12:45	13:00	-	-	-	-	6	-	-	-	-	-	3	-	**9**	41
13:00	13:15	-	-	-	-	2	-	-	-	-	-	6	-	**8**	36
13:15	13:30	-	-	-	-	1	-	-	-	-	-	3	-	**4**	29
13:30	13:45	-	-	-	-	3	-	-	-	-	-	4	-	**7**	28
13:45	14:00	-	-	-	-	1	-	-	-	-	4	1	-	**6**	25
14:00	14:15	-	-	-	-	4	-	-	-	-	-	6	-	**10**	27
14:15	14:30	-	-	-	-	1	-	-	-	-	-	5	-	**6**	29
14:30	14:45	-	-	-	-	3	-	-	-	-	-	3	-	**6**	28
14:45	15:00	-	-	-	-	4	-	-	-	-	-	1	-	**5**	27
15:00	15:15	-	-	-	-	5	-	-	-	-	-	2	-	**7**	
15:15	15:30	-	-	-	-	3	-	-	-	-	-	3	-	**6**	
15:30	15:45	-	-	-	-	5	-	-	-	-	-	3	-	**8**	
15:45	16:00	-	-	-	-	6	-	-	-	-	-	5	-	**11**	32
16:00	16:15	-	-	-	-	6	-	-	-	-	-	1	-	**7**	32
16:15	16:30	-	-	-	-	1	-	-	-	-	-	4	-	**5**	31
16:30	16:45	-	-	-	-	-	-	-	-	-	-	2	-	**2**	25
16:45	17:00	-	-	-	-	5	-	-	-	-	-	4	-	**9**	23
17:00	17:15	-	-	-	-	2	-	-	-	-	-	8	-	**10**	26
17:15	17:30	-	-	-	-	4	-	-	-	-	-	3	-	**7**	28
17:30	17:45	-	-	-	-	6	-	-	-	-	-	-	-	**6**	32
17:45	18:00	-	-	-	-	3	-	-	-	-	-	2	-	**5**	28
TOTAL		**-**	**-**	**-**	**-**	**175**	**1**	**-**	**-**	**-**	**5**	**157**	**-**	**338**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
07:00	08:00	-	-	-	-	20	-	-	-	-	-	14	-	**34**	**AM PEAK**
07:00	08:00	-	-	-	-	0.56	-	-	-	-	-	0.58	-	**0.77**	**AM PHF**
12:00	13:00	-	-	-	-	22	-	-	-	-	1	18	-	**41**	**MID PEAK**
12:00	13:00	-	-	-	-	0.61	-	-	-	-	0.25	0.50	-	**0.79**	**MID PHF**
15:00	16:00	-	-	-	-	19	-	-	-	-	-	13	-	**32**	**PM PEAK**
15:00	16:00	-	-	-	-	0.79	-	-	-	-	-	0.65	-	**0.73**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	43	-	-	-	-	-	38	-	**81**	**AM TOTAL**
09:00	15:00	-	-	-	-	86	1	-	-	-	5	82	-	**174**	**MID TOTAL**
15:00	18:00	-	-	-	-	46	-	-	-	-	-	37	-	**83**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

OVERVIEW MAP & VIDEO FRAME

JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND

R54

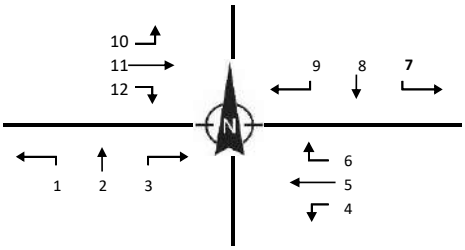
NORTHERN APPROACH / SOUTHBOUND

SOUTHERN APPROACH / NORTHBOUND

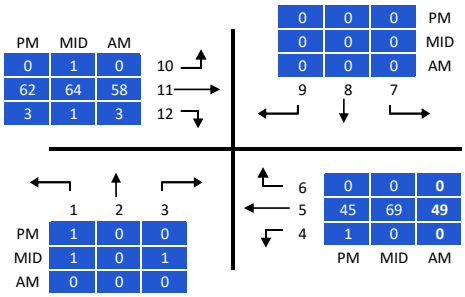
D1113

EASTERN APPROACH / WESTBOUND

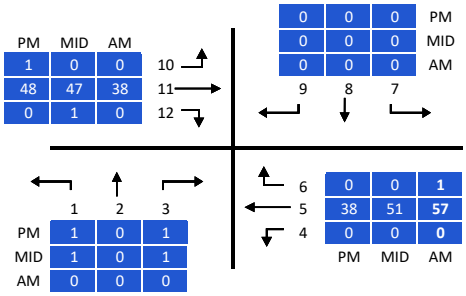
R54



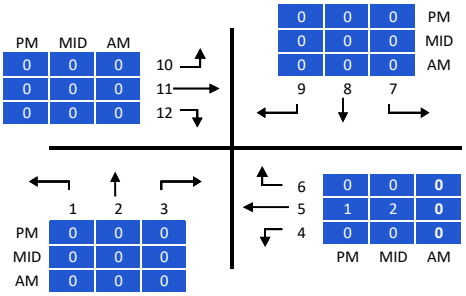
TOTAL VEHICLES SUMMARY



LIGHT VEHICLES



MINI BUS TAXI



BUSSES

HEAVY VEHICLES

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	1	5	-	-	-	-	-	9	-	**15**	
06:15	06:30	-	-	-	-	11	-	-	-	-	-	7	-	**18**	
06:30	06:45	-	-	-	1	11	-	-	-	1	-	9	-	**22**	
06:45	07:00	-	-	-	-	12	-	-	-	-	-	16	-	**28**	83
07:00	07:15	-	-	-	-	12	-	-	-	-	-	18	1	**31**	99
07:15	07:30	-	-	-	-	15	-	-	-	-	-	16	-	**31**	112
07:30	07:45	-	-	-	-	10	-	-	-	-	-	8	2	**20**	110
07:45	08:00	-	-	-	-	30	-	-	-	-	-	4	-	**34**	116
08:00	08:15	-	-	-	-	17	-	-	-	-	-	9	-	**26**	111
08:15	08:30	-	-	-	-	16	1	-	-	-	-	8	-	**25**	105
08:30	08:45	-	-	-	-	15	-	-	-	-	-	16	-	**31**	116
08:45	09:00	-	-	-	-	21	-	-	-	-	-	18	-	**39**	121
09:00	09:15	-	-	-	-	11	-	-	-	-	-	11	-	**22**	
09:15	09:30	2	-	-	2	10	-	-	-	-	-	15	-	**29**	
09:30	09:45	-	-	-	-	14	-	-	-	-	-	16	1	**31**	
09:45	10:00	-	-	1	1	18	-	-	-	-	-	6	1	**27**	109
10:00	10:15	1	-	-	-	15	-	-	-	-	-	5	-	**21**	108
10:15	10:30	-	-	-	-	14	-	-	-	-	-	9	-	**23**	102
10:30	10:45	1	-	-	-	13	-	-	-	-	-	17	-	**31**	102
10:45	11:00	-	-	-	-	20	-	-	-	-	-	12	-	**32**	107
11:00	11:15	-	-	-	1	16	-	-	-	-	-	11	1	**29**	115
11:15	11:30	-	-	-	3	11	-	-	-	-	-	18	2	**34**	126
11:30	11:45	-	-	-	2	18	-	-	-	-	-	18	1	**39**	134
11:45	12:00	-	-	-	-	11	-	-	-	-	-	9	-	**20**	122
12:00	12:15	-	-	-	-	8	-	-	-	-	1	22	-	**31**	124
12:15	12:30	-	-	1	-	20	-	-	-	-	1	13	-	**35**	125
12:30	12:45	-	-	-	-	18	-	-	-	-	-	17	-	**35**	121
12:45	13:00	-	-	-	-	16	-	-	-	-	-	14	-	**30**	131
13:00	13:15	1	-	-	-	15	-	-	-	-	-	20	1	**37**	137
13:15	13:30	-	-	-	-	8	-	-	-	-	-	12	-	**20**	122
13:30	13:45	-	-	-	-	10	-	1	-	-	-	15	1	**27**	114
13:45	14:00	-	-	-	-	17	-	-	-	-	-	13	-	**30**	114
14:00	14:15	1	-	-	-	8	-	-	-	-	-	19	1	**29**	106
14:15	14:30	-	-	-	-	9	-	-	-	-	-	19	-	**28**	114
14:30	14:45	-	-	-	-	15	-	-	-	-	-	12	1	**28**	115
14:45	15:00	-	-	-	-	14	-	-	-	-	-	20	-	**34**	119
15:00	15:15	1	-	1	-	14	-	-	-	-	-	14	-	**30**	
15:15	15:30	1	-	-	-	13	-	-	-	-	-	17	1	**32**	
15:30	15:45	-	-	-	-	17	-	-	-	-	1	13	-	**31**	
15:45	16:00	2	-	-	-	16	-	-	-	-	-	17	-	**35**	128
16:00	16:15	1	-	-	-	16	-	-	-	-	-	11	1	**29**	127
16:15	16:30	-	-	-	-	4	-	-	-	-	-	14	-	**18**	113
16:30	16:45	-	-	-	-	7	-	-	-	-	-	14	1	**22**	104
16:45	17:00	1	-	-	1	15	-	-	-	-	-	17	1	**35**	104
17:00	17:15	-	-	-	-	9	-	-	-	-	-	16	1	**26**	101
17:15	17:30	-	-	-	-	14	-	-	-	-	-	15	-	**29**	112
17:30	17:45	1	-	-	1	14	-	-	-	-	-	8	-	**24**	114
17:45	18:00	-	-	-	-	9	-	-	-	-	-	16	1	**26**	105
TOTAL		**13**	**-**	**3**	**13**	**652**	**1**	**1**	**-**	**1**	**3**	**653**	**19**	**1 359**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	-	-	-	-	49	-	-	-	-	-	58	3	**110**	**AM PEAK**
08:00	09:00	-	-	-	-	0.76	0.25	-	-	-	-	0.71	-	**0.78**	**AM PHF**
12:15	13:15	1	-	1	-	69	-	-	-	-	1	64	1	**137**	**MID PEAK**
12:15	13:15	0.25	-	0.25	-	0.86	-	-	-	-	0.25	0.80	0.25	**0.93**	**MID PHF**
16:30	17:30	1	-	-	1	45	-	-	-	-	-	62	3	**112**	**PM PEAK**
15:00	16:00	0.50	-	0.25	-	0.88	-	-	-	-	0.25	0.90	0.25	**0.91**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	2	175	1	-	-	1	-	138	3	**320**	**AM TOTAL**
09:00	15:00	6	-	2	9	329	-	1	-	-	2	343	10	**702**	**MID TOTAL**
15:00	18:00	7	-	1	2	148	-	-	-	-	1	172	6	**337**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	1	4	-	-	-	-	-	6	-	**11**	
06:15	06:30	-	-	-	-	7	-	-	-	-	-	6	-	**13**	
06:30	06:45	-	-	-	1	8	-	-	-	1	-	5	-	**15**	
06:45	07:00	-	-	-	-	7	-	-	-	-	-	12	-	**19**	58
07:00	07:15	-	-	-	-	10	-	-	-	-	-	12	1	**23**	70
07:15	07:30	-	-	-	-	9	-	-	-	-	-	12	-	**21**	78
07:30	07:45	-	-	-	-	8	-	-	-	-	-	7	1	**16**	79
07:45	08:00	-	-	-	-	20	-	-	-	-	-	2	-	**22**	82
08:00	08:15	-	-	-	-	14	-	-	-	-	-	7	-	**21**	80
08:15	08:30	-	-	-	-	11	1	-	-	-	-	6	-	**18**	77
08:30	08:45	-	-	-	-	14	-	-	-	-	-	11	-	**25**	86
08:45	09:00	-	-	-	-	18	-	-	-	-	-	14	-	**32**	96
09:00	09:15	-	-	-	-	10	-	-	-	-	-	8	-	**18**	
09:15	09:30	-	-	-	1	8	-	-	-	-	-	11	-	**20**	
09:30	09:45	-	-	-	-	10	-	-	-	-	-	13	1	**24**	
09:45	10:00	-	-	1	1	15	-	-	-	-	-	5	1	**23**	85
10:00	10:15	1	-	-	-	13	-	-	-	-	-	4	-	**18**	85
10:15	10:30	-	-	-	-	9	-	-	-	-	-	7	-	**16**	81
10:30	10:45	1	-	-	-	11	-	-	-	-	-	14	-	**26**	83
10:45	11:00	-	-	-	-	13	-	-	-	-	-	9	-	**22**	82
11:00	11:15	-	-	-	1	12	-	-	-	-	-	8	1	**22**	86
11:15	11:30	-	-	-	3	6	-	-	-	-	-	14	2	**25**	95
11:30	11:45	-	-	-	1	15	-	-	-	-	-	13	-	**29**	98
11:45	12:00	-	-	-	-	8	-	-	-	-	-	5	-	**13**	89
12:00	12:15	-	-	-	-	3	-	-	-	-	1	15	-	**19**	86
12:15	12:30	-	-	1	-	12	-	-	-	-	-	11	-	**24**	85
12:30	12:45	-	-	-	-	15	-	-	-	-	-	12	-	**27**	83
12:45	13:00	-	-	-	-	12	-	-	-	-	-	11	-	**23**	93
13:00	13:15	1	-	-	-	12	-	-	-	-	-	13	1	**27**	101
13:15	13:30	-	-	-	-	7	-	-	-	-	-	10	-	**17**	94
13:30	13:45	-	-	-	-	8	-	1	-	-	-	10	1	**20**	87
13:45	14:00	-	-	-	-	16	-	-	-	-	-	8	-	**24**	88
14:00	14:15	1	-	-	-	4	-	-	-	-	-	13	1	**19**	80
14:15	14:30	-	-	-	-	8	-	-	-	-	-	14	-	**22**	85
14:30	14:45	-	-	-	-	12	-	-	-	-	-	9	-	**21**	86
14:45	15:00	-	-	-	-	9	-	-	-	-	-	19	-	**28**	90
15:00	15:15	1	-	1	-	8	-	-	-	-	-	12	-	**22**	
15:15	15:30	-	-	-	-	10	-	-	-	-	-	13	-	**23**	
15:30	15:45	-	-	-	-	10	-	-	-	-	1	10	-	**21**	
15:45	16:00	-	-	-	-	10	-	-	-	-	-	13	-	**23**	89
16:00	16:15	1	-	-	-	10	-	-	-	-	-	9	1	**21**	88
16:15	16:30	-	-	-	-	3	-	-	-	-	-	9	-	**12**	77
16:30	16:45	-	-	-	-	7	-	-	-	-	-	13	1	**21**	77
16:45	17:00	1	-	-	-	11	-	-	-	-	-	13	1	**26**	80
17:00	17:15	-	-	-	-	7	-	-	-	-	-	8	1	**16**	75
17:15	17:30	-	-	-	-	10	-	-	-	-	-	12	-	**22**	85
17:30	17:45	1	-	-	-	9	-	-	-	-	-	8	-	**18**	82
17:45	18:00	-	-	-	-	6	-	-	-	-	-	14	1	**21**	77
TOTAL		**8**	**-**	**3**	**9**	**479**	**1**	**1**	**-**	**1**	**2**	**490**	**15**	**1 009**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
08:00	09:00	-	-	-	-	57	1	-	-	-	-	38	-	**96**	**AM PEAK**
08:00	09:00	-	-	-	-	0.72	0.25	-	-	-	-	0.68	-	**0.75**	**AM PHF**
12:15	13:15	1	-	1	-	51	-	-	-	-	-	47	1	**101**	**MID PEAK**
12:15	13:15	0.25	-	0.25	-	0.85	-	-	-	-	-	0.90	0.25	**0.94**	**MID PHF**
15:00	16:00	1	-	1	-	38	-	-	-	-	1	48	-	**89**	**PM PEAK**
15:00	16:00	0.25	-	0.25	-	0.95	-	-	-	-	0.25	0.92	-	**0.97**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	2	130	1	-	-	1	-	100	2	**236**	**AM TOTAL**
09:00	15:00	4	-	2	7	248	-	1	-	-	1	256	8	**527**	**MID TOTAL**
15:00	18:00	4	-	1	-	101	-	-	-	-	1	134	5	**246**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:00	12:15	-	-	-	-	1	-	-	-	-	-	-	-	1	1
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	1	-	-	-	-	-	-	-	1	1
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:45	15:00	-	-	-	-	1	-	-	-	-	-	-	-	1	2
15:00	15:15	-	-	-	-	1	-	-	-	-	-	-	-	1	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		-	-	-	-	4	-	-	-	-	-	-	-	4	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	AM PEAK
06:00	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	AM PHF
14:00	15:00	-	-	-	-	2	-	-	-	-	-	-	-	2	MID PEAK
14:00	15:00	-	-	-	-	0.50	-	-	-	-	-	-	-	0.50	MID PHF
15:00	16:00	-	-	-	-	1	-	-	-	-	-	-	-	1	PM PEAK
15:00	16:00	-	-	-	-	0.25	-	-	-	-	-	-	-	0.25	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	AM TOTAL
09:00	15:00	-	-	-	-	3	-	-	-	-	-	-	-	3	MID TOTAL
15:00	18:00	-	-	-	-	1	-	-	-	-	-	-	-	1	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	1	-	-	-	-	-	-	-	1	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	1	-	-	-	-	-	-	-	1	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	3	-	3	3
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	3
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	1	-	1	
15:30	15:45	-	-	-	-	2	-	-	-	-	-	-	-	2	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
16:00	16:15	-	-	-	-	-	-	-	-	-	-	1	-	1	4
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		-	-	-	-	4	-	-	-	-	-	5	-	9	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	07:00	-	-	-	-	2	-	-	-	-	-	-	-	2	AM PEAK
06:00	07:00	-	-	-	-	0.50	-	-	-	-	-	-	-	0.50	AM PHF
10:45	11:45	-	-	-	-	-	-	-	-	-	-	3	-	3	MID PEAK
10:45	11:45	-	-	-	-	-	-	-	-	-	-	0.25	-	0.25	MID PHF
15:15	16:15	-	-	-	-	2	-	-	-	-	-	2	-	4	PM PEAK
15:15	16:15	-	-	-	-	0.25	-	-	-	-	-	0.50	-	0.50	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	2	-	-	-	-	-	-	-	2	AM TOTAL
09:00	15:00	-	-	-	-	-	-	-	-	-	-	3	-	3	MID TOTAL
15:00	18:00	-	-	-	-	2	-	-	-	-	-	2	-	4	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R54 & D1113				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	3	-	**3**	
06:15	06:30	-	-	-	-	4	-	-	-	-	-	1	-	**5**	
06:30	06:45	-	-	-	-	2	-	-	-	-	-	4	-	**6**	
06:45	07:00	-	-	-	-	5	-	-	-	-	-	4	-	**9**	23
07:00	07:15	-	-	-	-	2	-	-	-	-	-	6	-	**8**	28
07:15	07:30	-	-	-	-	6	-	-	-	-	-	4	-	**10**	33
07:30	07:45	-	-	-	-	2	-	-	-	-	-	1	1	**4**	31
07:45	08:00	-	-	-	-	10	-	-	-	-	-	2	-	**12**	34
08:00	08:15	-	-	-	-	3	-	-	-	-	-	2	-	**5**	31
08:15	08:30	-	-	-	-	5	-	-	-	-	-	2	-	**7**	28
08:30	08:45	-	-	-	-	1	-	-	-	-	-	5	-	**6**	30
08:45	09:00	-	-	-	-	3	-	-	-	-	-	4	-	**7**	25
09:00	09:15	-	-	-	-	1	-	-	-	-	-	3	-	**4**	
09:15	09:30	2	-	-	1	2	-	-	-	-	-	4	-	**9**	
09:30	09:45	-	-	-	-	4	-	-	-	-	-	3	-	**7**	
09:45	10:00	-	-	-	-	3	-	-	-	-	-	1	-	**4**	24
10:00	10:15	-	-	-	-	2	-	-	-	-	-	1	-	**3**	23
10:15	10:30	-	-	-	-	5	-	-	-	-	-	2	-	**7**	21
10:30	10:45	-	-	-	-	2	-	-	-	-	-	3	-	**5**	19
10:45	11:00	-	-	-	-	7	-	-	-	-	-	3	-	**10**	25
11:00	11:15	-	-	-	-	4	-	-	-	-	-	3	-	**7**	29
11:15	11:30	-	-	-	-	5	-	-	-	-	-	4	-	**9**	31
11:30	11:45	-	-	-	1	3	-	-	-	-	-	2	1	**7**	33
11:45	12:00	-	-	-	-	3	-	-	-	-	-	4	-	**7**	30
12:00	12:15	-	-	-	-	4	-	-	-	-	-	7	-	**11**	34
12:15	12:30	-	-	-	-	8	-	-	-	-	1	2	-	**11**	36
12:30	12:45	-	-	-	-	3	-	-	-	-	-	5	-	**8**	37
12:45	13:00	-	-	-	-	4	-	-	-	-	-	3	-	**7**	37
13:00	13:15	-	-	-	-	3	-	-	-	-	-	7	-	**10**	36
13:15	13:30	-	-	-	-	1	-	-	-	-	-	2	-	**3**	28
13:30	13:45	-	-	-	-	2	-	-	-	-	-	5	-	**7**	27
13:45	14:00	-	-	-	-	1	-	-	-	-	-	5	-	**6**	26
14:00	14:15	-	-	-	-	3	-	-	-	-	-	6	-	**9**	25
14:15	14:30	-	-	-	-	1	-	-	-	-	-	5	-	**6**	28
14:30	14:45	-	-	-	-	3	-	-	-	-	-	3	1	**7**	28
14:45	15:00	-	-	-	-	4	-	-	-	-	-	1	-	**5**	27
15:00	15:15	-	-	-	-	5	-	-	-	-	-	2	-	**7**	
15:15	15:30	1	-	-	-	3	-	-	-	-	-	3	1	**8**	
15:30	15:45	-	-	-	-	5	-	-	-	-	-	3	-	**8**	
15:45	16:00	2	-	-	-	6	-	-	-	-	-	4	-	**12**	35
16:00	16:15	-	-	-	-	6	-	-	-	-	-	1	-	**7**	35
16:15	16:30	-	-	-	-	1	-	-	-	-	-	5	-	**6**	33
16:30	16:45	-	-	-	-	-	-	-	-	-	-	1	-	**1**	26
16:45	17:00	-	-	-	1	4	-	-	-	-	-	4	-	**9**	23
17:00	17:15	-	-	-	-	2	-	-	-	-	-	8	-	**10**	26
17:15	17:30	-	-	-	-	4	-	-	-	-	-	3	-	**7**	27
17:30	17:45	-	-	-	1	5	-	-	-	-	-	-	-	**6**	32
17:45	18:00	-	-	-	-	3	-	-	-	-	-	2	-	**5**	28
TOTAL		**5**	**-**	**-**	**4**	**165**	**-**	**-**	**-**	**-**	**1**	**158**	**4**	**337**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
07:00	08:00	-	-	-	-	20	-	-	-	-	-	13	1	**34**	**AM PEAK**
07:00	08:00	-	-	-	-	0.50	-	-	-	-	-	0.54	0.25	**0.71**	**AM PHF**
11:45	12:45	-	-	-	-	18	-	-	-	-	1	18	-	**37**	**MID PEAK**
11:45	12:45	-	-	-	-	0.56	-	-	-	-	0.25	0.64	-	**0.84**	**MID PHF**
15:00	16:00	3	-	-	-	19	-	-	-	-	-	12	1	**35**	**PM PEAK**
15:00	16:00	0.38	-	-	-	0.79	-	-	-	-	-	0.75	0.25	**0.73**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	43	-	-	-	-	-	38	1	**82**	**AM TOTAL**
09:00	15:00	2	-	-	2	78	-	-	-	-	1	84	2	**169**	**MID TOTAL**
15:00	18:00	3	-	-	2	44	-	-	-	-	-	36	1	**86**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D377 & D1017				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P3	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

OVERVIEW MAP & VIDEO FRAME

JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND

D1017

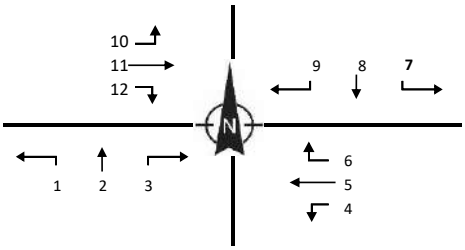
NORTHERN APPROACH / SOUTHBOUND

SOUTHERN APPROACH / NORTHBOUND

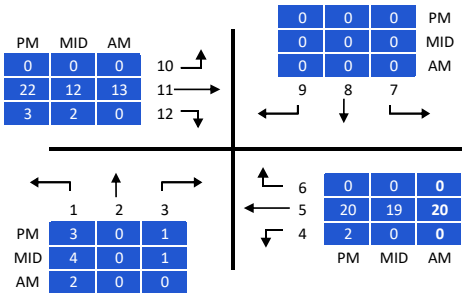
D377

EASTERN APPROACH / WESTBOUND

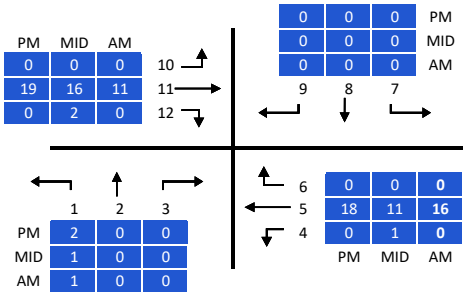
D1017



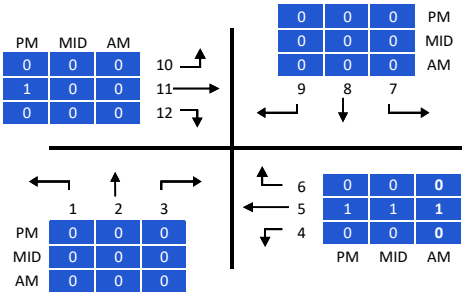
TOTAL VEHICLES SUMMARY



LIGHT VEHICLES



MINI BUS TAXI



BUSSES

HEAVY VEHICLES

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D377 & D1017				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P3	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	1	-	-	-	-	-	-	1	**2**	
06:15	06:30	-	-	-	-	4	-	-	-	-	-	2	-	**6**	
06:30	06:45	-	-	-	-	7	-	-	-	-	-	1	-	**8**	
06:45	07:00	2	-	-	-	7	-	-	-	-	-	1	-	**10**	26
07:00	07:15	-	-	-	-	4	-	-	-	-	-	5	-	**9**	33
07:15	07:30	-	-	-	-	4	-	-	-	-	-	3	-	**7**	34
07:30	07:45	-	-	-	-	5	-	-	-	-	-	4	-	**9**	35
07:45	08:00	-	-	-	-	2	-	-	-	-	-	2	-	**4**	29
08:00	08:15	-	-	-	-	2	-	-	-	-	-	3	1	**6**	26
08:15	08:30	-	-	1	-	6	-	-	-	-	-	2	1	**10**	29
08:30	08:45	-	-	-	-	2	-	-	-	-	-	1	1	**4**	24
08:45	09:00	-	-	-	-	2	-	-	-	-	-	4	1	**7**	27
09:00	09:15	-	-	-	-	1	-	-	-	-	-	1	2	**4**	
09:15	09:30	-	-	-	-	3	-	-	-	-	-	6	-	**9**	
09:30	09:45	-	-	-	-	5	-	-	-	-	-	3	-	**8**	
09:45	10:00	1	-	1	-	3	-	-	-	-	-	4	2	**11**	32
10:00	10:15	-	-	-	1	1	-	-	-	-	-	1	-	**3**	31
10:15	10:30	1	-	-	-	4	-	-	-	-	-	3	-	**8**	30
10:30	10:45	2	-	-	-	4	-	-	-	-	-	2	-	**8**	30
10:45	11:00	-	-	1	-	6	-	-	-	-	-	6	2	**15**	34
11:00	11:15	1	-	-	-	5	-	-	-	-	-	1	-	**7**	38
11:15	11:30	-	-	-	1	4	-	-	-	-	-	3	-	**8**	38
11:30	11:45	-	-	1	-	1	-	-	-	-	-	2	-	**4**	34
11:45	12:00	-	-	-	-	8	-	-	-	-	-	3	-	**11**	30
12:00	12:15	-	-	1	-	3	-	-	-	-	-	2	1	**7**	30
12:15	12:30	-	-	-	-	-	-	-	-	-	-	3	-	**3**	25
12:30	12:45	-	-	-	-	5	-	-	-	-	-	4	1	**10**	31
12:45	13:00	1	-	-	1	3	-	-	-	-	-	2	-	**7**	27
13:00	13:15	-	-	-	-	6	-	-	-	-	-	7	-	**13**	33
13:15	13:30	1	-	-	-	1	-	-	-	-	-	5	1	**8**	38
13:30	13:45	1	-	-	-	6	-	-	-	-	-	1	-	**8**	36
13:45	14:00	-	-	-	-	-	-	-	-	-	-	2	-	**2**	31
14:00	14:15	1	-	-	-	3	-	-	-	-	-	3	-	**7**	25
14:15	14:30	-	-	-	-	4	-	-	-	-	-	4	-	**8**	25
14:30	14:45	2	-	1	-	5	-	-	-	-	-	3	-	**11**	28
14:45	15:00	-	-	-	1	3	-	-	-	-	-	1	-	**5**	31
15:00	15:15	2	-	-	-	2	-	-	-	-	-	5	-	**9**	
15:15	15:30	-	-	-	-	6	-	-	-	-	-	6	-	**12**	
15:30	15:45	1	-	-	-	6	-	-	-	-	-	7	-	**14**	
15:45	16:00	1	-	-	-	1	-	-	-	-	-	4	1	**7**	42
16:00	16:15	-	-	-	-	8	-	-	-	-	-	4	-	**12**	45
16:15	16:30	1	-	-	-	1	-	-	-	-	-	5	-	**7**	40
16:30	16:45	-	-	-	-	3	-	-	-	-	-	6	-	**9**	35
16:45	17:00	2	-	-	1	6	-	-	-	-	-	4	2	**15**	43
17:00	17:15	-	-	-	-	5	-	-	-	-	-	2	1	**8**	39
17:15	17:30	1	-	1	1	6	-	-	-	-	-	10	-	**19**	51
17:30	17:45	-	-	-	-	3	-	-	-	-	-	8	-	**11**	53
17:45	18:00	-	-	-	-	3	-	-	-	-	-	5	-	**8**	46
TOTAL		**21**	**-**	**7**	**6**	**180**	**-**	**-**	**-**	**-**	**-**	**166**	**18**	**398**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	2	-	-	-	20	-	-	-	-	-	13	-	**35**	**AM PEAK**
06:45	07:45	0.25	-	-	-	0.71	-	-	-	-	-	0.65	-	**0.88**	**AM PHF**
10:15	11:15	4	-	1	-	19	-	-	-	-	-	12	2	**38**	**MID PEAK**
10:15	11:15	0.50	-	0.25	-	0.79	-	-	-	-	-	0.50	0.25	**0.63**	**MID PHF**
16:30	17:30	3	-	1	2	20	-	-	-	-	-	22	3	**51**	**PM PEAK**
16:45	17:45	0.38	-	0.25	0.50	0.83	-	-	-	-	-	0.60	0.38	**0.70**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	2	-	1	-	46	-	-	-	-	-	28	5	**82**	**AM TOTAL**
09:00	15:00	11	-	5	4	84	-	-	-	-	-	72	9	**185**	**MID TOTAL**
15:00	18:00	8	-	1	2	50	-	-	-	-	-	66	4	**131**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D377 & D1017				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P3	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	1	**1**	
06:15	06:30	-	-	-	-	4	-	-	-	-	-	2	-	**6**	
06:30	06:45	-	-	-	-	5	-	-	-	-	-	1	-	**6**	
06:45	07:00	1	-	-	-	6	-	-	-	-	-	-	-	**7**	20
07:00	07:15	-	-	-	-	2	-	-	-	-	-	5	-	**7**	26
07:15	07:30	-	-	-	-	3	-	-	-	-	-	3	-	**6**	26
07:30	07:45	-	-	-	-	5	-	-	-	-	-	3	-	**8**	28
07:45	08:00	-	-	-	-	2	-	-	-	-	-	2	-	**4**	25
08:00	08:15	-	-	-	-	2	-	-	-	-	-	3	1	**6**	24
08:15	08:30	-	-	1	-	5	-	-	-	-	-	1	1	**8**	26
08:30	08:45	-	-	-	-	1	-	-	-	-	-	1	-	**2**	20
08:45	09:00	-	-	-	-	2	-	-	-	-	-	4	-	**6**	22
09:00	09:15	-	-	-	-	1	-	-	-	-	-	1	1	**3**	
09:15	09:30	-	-	-	-	1	-	-	-	-	-	3	-	**4**	
09:30	09:45	-	-	-	-	4	-	-	-	-	-	3	-	**7**	
09:45	10:00	-	-	1	-	3	-	-	-	-	-	4	1	**9**	23
10:00	10:15	-	-	-	1	1	-	-	-	-	-	1	-	**3**	23
10:15	10:30	-	-	-	-	2	-	-	-	-	-	3	-	**5**	24
10:30	10:45	2	-	-	-	2	-	-	-	-	-	1	-	**5**	22
10:45	11:00	-	-	1	-	6	-	-	-	-	-	4	1	**12**	25
11:00	11:15	1	-	-	-	3	-	-	-	-	-	-	-	**4**	26
11:15	11:30	-	-	-	1	4	-	-	-	-	-	2	-	**7**	28
11:30	11:45	-	-	1	-	1	-	-	-	-	-	2	-	**4**	27
11:45	12:00	-	-	-	-	8	-	-	-	-	-	2	-	**10**	25
12:00	12:15	-	-	1	-	2	-	-	-	-	-	2	1	**6**	27
12:15	12:30	-	-	-	-	-	-	-	-	-	-	3	-	**3**	23
12:30	12:45	-	-	-	-	4	-	-	-	-	-	2	1	**7**	26
12:45	13:00	1	-	-	1	2	-	-	-	-	-	2	-	**6**	22
13:00	13:15	-	-	-	-	4	-	-	-	-	-	7	-	**11**	27
13:15	13:30	-	-	-	-	1	-	-	-	-	-	5	1	**7**	31
13:30	13:45	-	-	-	-	4	-	-	-	-	-	1	-	**5**	29
13:45	14:00	-	-	-	-	-	-	-	-	-	-	2	-	**2**	25
14:00	14:15	-	-	-	-	3	-	-	-	-	-	3	-	**6**	20
14:15	14:30	-	-	-	-	2	-	-	-	-	-	4	-	**6**	19
14:30	14:45	-	-	1	-	3	-	-	-	-	-	2	-	**6**	20
14:45	15:00	-	-	-	-	3	-	-	-	-	-	1	-	**4**	22
15:00	15:15	1	-	-	-	-	-	-	-	-	-	4	-	**5**	
15:15	15:30	-	-	-	-	4	-	-	-	-	-	6	-	**10**	
15:30	15:45	1	-	-	-	5	-	-	-	-	-	5	-	**11**	
15:45	16:00	1	-	-	-	1	-	-	-	-	-	4	-	**6**	32
16:00	16:15	-	-	-	-	8	-	-	-	-	-	4	-	**12**	39
16:15	16:30	-	-	-	-	1	-	-	-	-	-	3	-	**4**	33
16:30	16:45	-	-	-	-	2	-	-	-	-	-	6	-	**8**	30
16:45	17:00	-	-	-	1	3	-	-	-	-	-	3	1	**8**	32
17:00	17:15	-	-	-	-	5	-	-	-	-	-	1	-	**6**	26
17:15	17:30	-	-	1	1	4	-	-	-	-	-	8	-	**14**	36
17:30	17:45	-	-	-	-	3	-	-	-	-	-	6	-	**9**	37
17:45	18:00	-	-	-	-	3	-	-	-	-	-	2	-	**5**	34
TOTAL		**8**	**-**	**7**	**5**	**140**	**-**	**-**	**-**	**-**	**-**	**137**	**10**	**307**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	1	-	-	-	16	-	-	-	-	-	11	-	**28**	**AM PEAK**
06:45	07:45	0.25	-	-	-	0.67	-	-	-	-	-	0.55	-	**0.88**	**AM PHF**
12:30	13:30	1	-	-	1	11	-	-	-	-	-	16	2	**31**	**MID PEAK**
12:30	13:30	0.25	-	-	0.25	0.69	-	-	-	-	-	0.57	0.50	**0.70**	**MID PHF**
15:15	16:15	2	-	-	-	18	-	-	-	-	-	19	-	**39**	**PM PEAK**
15:15	16:15	0.50	-	-	-	0.56	-	-	-	-	-	0.79	-	**0.81**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	1	-	1	-	37	-	-	-	-	-	25	3	**67**	**AM TOTAL**
09:00	15:00	4	-	5	3	64	-	-	-	-	-	60	6	**142**	**MID TOTAL**
15:00	18:00	3	-	1	2	39	-	-	-	-	-	52	1	**98**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D377 & D1017				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P3	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

unitraf

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:15	07:30	-	-	-	-	1	-	-	-	-	-	-	-	1	1
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	1	-	-	-	-	-	-	-	1	1
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:30	14:45	-	-	-	-	-	-	-	-	-	-	1	-	1	1
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:15	16:30	-	-	-	-	-	-	-	-	-	-	1	-	1	1
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:45	17:00	-	-	-	-	1	-	-	-	-	-	-	-	1	2
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:45	18:00	-	-	-	-	-	-	-	-	-	-	1	-	1	1
TOTAL		-	-	-	-	3	-	-	-	-	-	3	-	6	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:30	07:30	-	-	-	-	1	-	-	-	-	-	-	-	1	AM PEAK
06:30	07:30	-	-	-	-	0.25	-	-	-	-	-	-	-	0.25	AM PHF
09:45	10:45	-	-	-	-	1	-	-	-	-	-	-	-	1	MID PEAK
09:45	10:45	-	-	-	-	0.25	-	-	-	-	-	-	-	0.25	MID PHF
16:00	17:00	-	-	-	-	1	-	-	-	-	-	1	-	2	PM PEAK
16:00	17:00	-	-	-	-	0.25	-	-	-	-	-	0.25	-	0.50	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	1	-	-	-	-	-	-	-	1	AM TOTAL
09:00	15:00	-	-	-	-	1	-	-	-	-	-	1	-	2	MID TOTAL
15:00	18:00	-	-	-	-	1	-	-	-	-	-	2	-	3	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D377 & D1017				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P3	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	1	-	-	-	-	-	-	-	-	-	1	-	2	2
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:45	15:00	-	-	-	1	-	-	-	-	-	-	-	-	1	1
15:00	15:15	1	-	-	-	-	-	-	-	-	-	-	-	1	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	1	1	2
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:30	17:45	-	-	-	-	-	-	-	-	-	-	1	-	1	1
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
TOTAL		2	-	-	1	-	-	-	-	-	-	2	1	6	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	07:00	1	-	-	-	-	-	-	-	-	-	1	-	2	AM PEAK
06:00	07:00	0.25	-	-	-	-	-	-	-	-	-	0.25	-	0.25	AM PHF
14:00	15:00	-	-	-	1	-	-	-	-	-	-	-	-	1	MID PEAK
14:00	15:00	-	-	-	0.25	-	-	-	-	-	-	-	-	0.25	MID PHF
15:00	16:00	1	-	-	-	-	-	-	-	-	-	-	1	2	PM PEAK
15:00	16:00	0.25	-	-	-	-	-	-	-	-	-	-	0.25	0.50	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	1	-	-	-	-	-	-	-	-	-	1	-	2	AM TOTAL
09:00	15:00	-	-	-	1	-	-	-	-	-	-	-	-	1	MID TOTAL
15:00	18:00	1	-	-	-	-	-	-	-	-	-	1	1	3	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D377 & D1017				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P3	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	1	-	-	-	-	-	-	-	1	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	2	-	-	-	-	-	-	-	2	
06:45	07:00	-	-	-	-	1	-	-	-	-	-	-	-	1	4
07:00	07:15	-	-	-	-	2	-	-	-	-	-	-	-	2	5
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	5
07:30	07:45	-	-	-	-	-	-	-	-	-	-	1	-	1	4
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:15	08:30	-	-	-	-	1	-	-	-	-	-	1	-	2	3
08:30	08:45	-	-	-	-	1	-	-	-	-	-	-	1	2	4
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	1	1	5
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	1	1	
09:15	09:30	-	-	-	-	2	-	-	-	-	-	3	-	5	
09:30	09:45	-	-	-	-	1	-	-	-	-	-	-	-	1	
09:45	10:00	1	-	-	-	-	-	-	-	-	-	-	1	2	9
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	8
10:15	10:30	1	-	-	-	2	-	-	-	-	-	-	-	3	6
10:30	10:45	-	-	-	-	1	-	-	-	-	-	1	-	2	7
10:45	11:00	-	-	-	-	-	-	-	-	-	-	2	1	3	8
11:00	11:15	-	-	-	-	2	-	-	-	-	-	1	-	3	11
11:15	11:30	-	-	-	-	-	-	-	-	-	-	1	-	1	9
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	7
11:45	12:00	-	-	-	-	-	-	-	-	-	-	1	-	1	5
12:00	12:15	-	-	-	-	1	-	-	-	-	-	-	-	1	3
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:30	12:45	-	-	-	-	1	-	-	-	-	-	2	-	3	5
12:45	13:00	-	-	-	-	1	-	-	-	-	-	-	-	1	5
13:00	13:15	-	-	-	-	2	-	-	-	-	-	-	-	2	6
13:15	13:30	1	-	-	-	-	-	-	-	-	-	-	-	1	7
13:30	13:45	1	-	-	-	2	-	-	-	-	-	-	-	3	7
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	6
14:00	14:15	1	-	-	-	-	-	-	-	-	-	-	-	1	5
14:15	14:30	-	-	-	-	2	-	-	-	-	-	-	-	2	6
14:30	14:45	2	-	-	-	2	-	-	-	-	-	-	-	4	7
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	7
15:00	15:15	-	-	-	-	2	-	-	-	-	-	1	-	3	
15:15	15:30	-	-	-	-	2	-	-	-	-	-	-	-	2	
15:30	15:45	-	-	-	-	1	-	-	-	-	-	2	-	3	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	8
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	5
16:15	16:30	1	-	-	-	-	-	-	-	-	-	1	-	2	5
16:30	16:45	-	-	-	-	1	-	-	-	-	-	-	-	1	3
16:45	17:00	2	-	-	-	2	-	-	-	-	-	1	1	6	9
17:00	17:15	-	-	-	-	-	-	-	-	-	-	1	1	2	11
17:15	17:30	1	-	-	-	2	-	-	-	-	-	2	-	5	14
17:30	17:45	-	-	-	-	-	-	-	-	-	-	1	-	1	14
17:45	18:00	-	-	-	-	-	-	-	-	-	-	2	-	2	10
TOTAL		11	-	-	-	37	-	-	-	-	-	24	7	79	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:15	07:15	-	-	-	-	5	-	-	-	-	-	-	-	5	AM PEAK
06:15	07:15	-	-	-	-	0.62	-	-	-	-	-	-	-	0.63	AM PHF
10:15	11:15	1	-	-	-	5	-	-	-	-	-	4	1	11	MID PEAK
10:15	11:15	0.25	-	-	-	0.62	-	-	-	-	-	0.50	0.25	0.92	MID PHF
16:30	17:30	3	-	-	-	5	-	-	-	-	-	4	2	14	PM PEAK
16:30	17:30	0.38	-	-	-	0.62	-	-	-	-	-	0.50	0.50	0.58	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	8	-	-	-	-	-	2	2	12	AM TOTAL
09:00	15:00	7	-	-	-	19	-	-	-	-	-	11	3	40	MID TOTAL
15:00	18:00	4	-	-	-	10	-	-	-	-	-	11	2	27	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R57 East of N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P4	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

OVERVIEW MAP & VIDEO FRAME

JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND

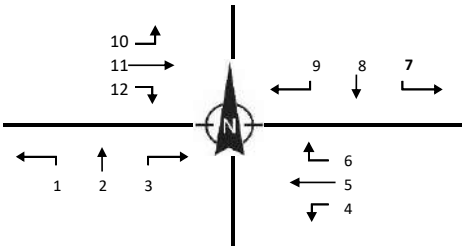
R57

NORTHERN APPROACH / SOUTHBOUND

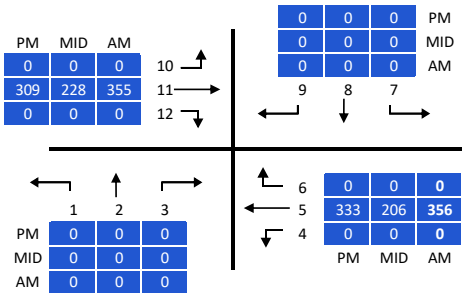
SOUTHERN APPROACH / NORTHBOUND

EASTERN APPROACH / WESTBOUND

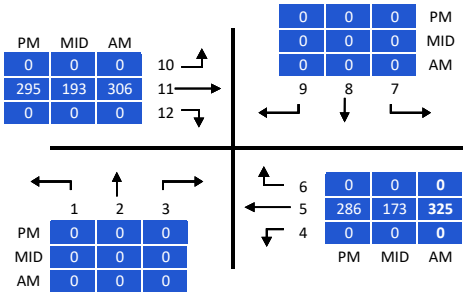
R57



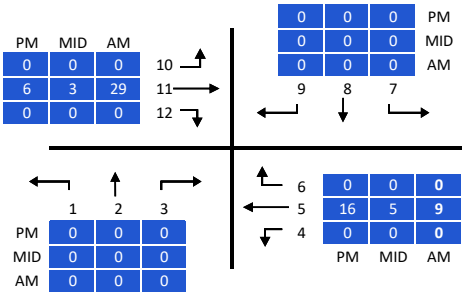
TOTAL VEHICLES SUMMARY



LIGHT VEHICLES



MINI BUS TAXI



BUSSES

HEAVY VEHICLES

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R57 East of N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P4	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	77	-	-	-	-	-	35	-	**112**	
06:15	06:30	-	-	-	-	68	-	-	-	-	-	49	-	**117**	
06:30	06:45	-	-	-	-	73	-	-	-	-	-	69	-	**142**	
06:45	07:00	-	-	-	-	81	-	-	-	-	-	93	-	**174**	545
07:00	07:15	-	-	-	-	117	-	-	-	-	-	97	-	**214**	647
07:15	07:30	-	-	-	-	84	-	-	-	-	-	81	-	**165**	695
07:30	07:45	-	-	-	-	74	-	-	-	-	-	84	-	**158**	711
07:45	08:00	-	-	-	-	88	-	-	-	-	-	81	-	**169**	706
08:00	08:15	-	-	-	-	65	-	-	-	-	-	67	-	**132**	624
08:15	08:30	-	-	-	-	57	-	-	-	-	-	69	-	**126**	585
08:30	08:45	-	-	-	-	45	-	-	-	-	-	68	-	**113**	540
08:45	09:00	-	-	-	-	50	-	-	-	-	-	63	-	**113**	484
09:00	09:15	-	-	-	-	49	-	-	-	-	-	52	-	**101**	
09:15	09:30	-	-	-	-	40	-	-	-	-	-	56	-	**96**	
09:30	09:45	-	-	-	-	38	-	-	-	-	-	54	-	**92**	
09:45	10:00	-	-	-	-	39	-	-	-	-	-	67	-	**106**	395
10:00	10:15	-	-	-	-	53	-	-	-	-	-	60	-	**113**	407
10:15	10:30	-	-	-	-	54	-	-	-	-	-	56	-	**110**	421
10:30	10:45	-	-	-	-	48	-	-	-	-	-	54	-	**102**	431
10:45	11:00	-	-	-	-	51	-	-	-	-	-	58	-	**109**	434
11:00	11:15	-	-	-	-	43	-	-	-	-	-	45	-	**88**	409
11:15	11:30	-	-	-	-	52	-	-	-	-	-	49	-	**101**	400
11:30	11:45	-	-	-	-	41	-	-	-	-	-	57	-	**98**	396
11:45	12:00	-	-	-	-	41	-	-	-	-	-	56	-	**97**	384
12:00	12:15	-	-	-	-	57	-	-	-	-	-	35	-	**92**	388
12:15	12:30	-	-	-	-	40	-	-	-	-	-	49	-	**89**	376
12:30	12:45	-	-	-	-	53	-	-	-	-	-	52	-	**105**	383
12:45	13:00	-	-	-	-	44	-	-	-	-	-	47	-	**91**	377
13:00	13:15	-	-	-	-	44	-	-	-	-	-	70	-	**114**	399
13:15	13:30	-	-	-	-	48	-	-	-	-	-	45	-	**93**	403
13:30	13:45	-	-	-	-	56	-	-	-	-	-	54	-	**110**	408
13:45	14:00	-	-	-	-	57	-	-	-	-	-	53	-	**110**	427
14:00	14:15	-	-	-	-	46	-	-	-	-	-	43	-	**89**	402
14:15	14:30	-	-	-	-	76	-	-	-	-	-	38	-	**114**	423
14:30	14:45	-	-	-	-	57	-	-	-	-	-	48	-	**105**	418
14:45	15:00	-	-	-	-	63	-	-	-	-	-	56	-	**119**	427
15:00	15:15	-	-	-	-	71	-	-	-	-	-	47	-	**118**	
15:15	15:30	-	-	-	-	57	-	-	-	-	-	66	-	**123**	
15:30	15:45	-	-	-	-	63	-	-	-	-	-	77	-	**140**	
15:45	16:00	-	-	-	-	61	-	-	-	-	-	88	-	**149**	530
16:00	16:15	-	-	-	-	63	-	-	-	-	-	79	-	**142**	554
16:15	16:30	-	-	-	-	74	-	-	-	-	-	90	-	**164**	595
16:30	16:45	-	-	-	-	78	-	-	-	-	-	91	-	**169**	624
16:45	17:00	-	-	-	-	85	-	-	-	-	-	66	-	**151**	626
17:00	17:15	-	-	-	-	84	-	-	-	-	-	84	-	**168**	652
17:15	17:30	-	-	-	-	86	-	-	-	-	-	68	-	**154**	642
17:30	17:45	-	-	-	-	60	-	-	-	-	-	84	-	**144**	617
17:45	18:00	-	-	-	-	70	-	-	-	-	-	82	-	**152**	618
TOTAL		-	-	-	-	**2 921**	-	-	-	-	-	**3 032**	-	**5 953**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	-	-	-	-	356	-	-	-	-	-	355	-	**711**	**AM PEAK**
06:45	07:45	-	-	-	-	0.76	-	-	-	-	-	0.91	-	**0.83**	**AM PHF**
10:00	11:00	-	-	-	-	206	-	-	-	-	-	228	-	**434**	**MID PEAK**
10:00	11:00	-	-	-	-	0.95	-	-	-	-	-	0.95	-	**0.96**	**MID PHF**
16:30	17:30	-	-	-	-	333	-	-	-	-	-	309	-	**642**	**PM PEAK**
16:15	17:15	-	-	-	-	0.94	-	-	-	-	-	0.91	-	**0.96**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	879	-	-	-	-	-	856	-	**1 735**	**AM TOTAL**
09:00	15:00	-	-	-	-	1 190	-	-	-	-	-	1 254	-	**2 444**	**MID TOTAL**
15:00	18:00	-	-	-	-	852	-	-	-	-	-	922	-	**1 774**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R57 East of N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P4	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	68	-	-	-	-	-	27	-	**95**	
06:15	06:30	-	-	-	-	60	-	-	-	-	-	39	-	**99**	
06:30	06:45	-	-	-	-	64	-	-	-	-	-	58	-	**122**	
06:45	07:00	-	-	-	-	73	-	-	-	-	-	68	-	**141**	457
07:00	07:15	-	-	-	-	108	-	-	-	-	-	87	-	**195**	557
07:15	07:30	-	-	-	-	75	-	-	-	-	-	68	-	**143**	601
07:30	07:45	-	-	-	-	63	-	-	-	-	-	76	-	**139**	618
07:45	08:00	-	-	-	-	79	-	-	-	-	-	75	-	**154**	631
08:00	08:15	-	-	-	-	51	-	-	-	-	-	62	-	**113**	549
08:15	08:30	-	-	-	-	45	-	-	-	-	-	62	-	**107**	513
08:30	08:45	-	-	-	-	39	-	-	-	-	-	65	-	**104**	478
08:45	09:00	-	-	-	-	40	-	-	-	-	-	57	-	**97**	421
09:00	09:15	-	-	-	-	38	-	-	-	-	-	42	-	**80**	
09:15	09:30	-	-	-	-	34	-	-	-	-	-	47	-	**81**	
09:30	09:45	-	-	-	-	31	-	-	-	-	-	48	-	**79**	
09:45	10:00	-	-	-	-	37	-	-	-	-	-	55	-	**92**	332
10:00	10:15	-	-	-	-	46	-	-	-	-	-	54	-	**100**	352
10:15	10:30	-	-	-	-	48	-	-	-	-	-	41	-	**89**	360
10:30	10:45	-	-	-	-	42	-	-	-	-	-	43	-	**85**	366
10:45	11:00	-	-	-	-	39	-	-	-	-	-	45	-	**84**	358
11:00	11:15	-	-	-	-	33	-	-	-	-	-	33	-	**66**	324
11:15	11:30	-	-	-	-	43	-	-	-	-	-	39	-	**82**	317
11:30	11:45	-	-	-	-	35	-	-	-	-	-	46	-	**81**	313
11:45	12:00	-	-	-	-	33	-	-	-	-	-	41	-	**74**	303
12:00	12:15	-	-	-	-	48	-	-	-	-	-	24	-	**72**	309
12:15	12:30	-	-	-	-	33	-	-	-	-	-	38	-	**71**	298
12:30	12:45	-	-	-	-	42	-	-	-	-	-	37	-	**79**	296
12:45	13:00	-	-	-	-	35	-	-	-	-	-	43	-	**78**	300
13:00	13:15	-	-	-	-	39	-	-	-	-	-	55	-	**94**	322
13:15	13:30	-	-	-	-	34	-	-	-	-	-	31	-	**65**	316
13:30	13:45	-	-	-	-	47	-	-	-	-	-	44	-	**91**	328
13:45	14:00	-	-	-	-	46	-	-	-	-	-	47	-	**93**	343
14:00	14:15	-	-	-	-	40	-	-	-	-	-	36	-	**76**	325
14:15	14:30	-	-	-	-	52	-	-	-	-	-	30	-	**82**	342
14:30	14:45	-	-	-	-	48	-	-	-	-	-	44	-	**92**	343
14:45	15:00	-	-	-	-	47	-	-	-	-	-	50	-	**97**	347
15:00	15:15	-	-	-	-	52	-	-	-	-	-	42	-	**94**	
15:15	15:30	-	-	-	-	39	-	-	-	-	-	57	-	**96**	
15:30	15:45	-	-	-	-	55	-	-	-	-	-	67	-	**122**	
15:45	16:00	-	-	-	-	49	-	-	-	-	-	81	-	**130**	442
16:00	16:15	-	-	-	-	59	-	-	-	-	-	71	-	**130**	478
16:15	16:30	-	-	-	-	68	-	-	-	-	-	75	-	**143**	525
16:30	16:45	-	-	-	-	68	-	-	-	-	-	83	-	**151**	554
16:45	17:00	-	-	-	-	76	-	-	-	-	-	61	-	**137**	561
17:00	17:15	-	-	-	-	74	-	-	-	-	-	76	-	**150**	581
17:15	17:30	-	-	-	-	78	-	-	-	-	-	60	-	**138**	576
17:30	17:45	-	-	-	-	55	-	-	-	-	-	70	-	**125**	550
17:45	18:00	-	-	-	-	61	-	-	-	-	-	75	-	**136**	549
TOTAL		-	-	-	-	**2 469**	-	-	-	-	-	**2 575**	-	**5 044**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
07:00	08:00	-	-	-	-	325	-	-	-	-	-	306	-	**631**	**AM PEAK**
07:00	08:00	-	-	-	-	0.75	-	-	-	-	-	0.88	-	**0.81**	**AM PHF**
09:45	10:45	-	-	-	-	173	-	-	-	-	-	193	-	**366**	**MID PEAK**
09:45	10:45	-	-	-	-	0.90	-	-	-	-	-	0.88	-	**0.92**	**MID PHF**
16:15	17:15	-	-	-	-	286	-	-	-	-	-	295	-	**581**	**PM PEAK**
16:15	17:15	-	-	-	-	0.94	-	-	-	-	-	0.89	-	**0.96**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	765	-	-	-	-	-	744	-	**1 509**	**AM TOTAL**
09:00	15:00	-	-	-	-	970	-	-	-	-	-	1 013	-	**1 983**	**MID TOTAL**
15:00	18:00	-	-	-	-	734	-	-	-	-	-	818	-	**1 552**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R57 East of N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P4	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

unitraf

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	1	-	**1**	
06:15	06:30	-	-	-	-	2	-	-	-	-	-	5	-	**7**	
06:30	06:45	-	-	-	-	1	-	-	-	-	-	5	-	**6**	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	16	-	**16**	30
07:00	07:15	-	-	-	-	1	-	-	-	-	-	5	-	**6**	35
07:15	07:30	-	-	-	-	5	-	-	-	-	-	4	-	**9**	37
07:30	07:45	-	-	-	-	3	-	-	-	-	-	4	-	**7**	38
07:45	08:00	-	-	-	-	1	-	-	-	-	-	2	-	**3**	25
08:00	08:15	-	-	-	-	2	-	-	-	-	-	2	-	**4**	23
08:15	08:30	-	-	-	-	6	-	-	-	-	-	-	-	**6**	20
08:30	08:45	-	-	-	-	-	-	-	-	-	-	2	-	**2**	15
08:45	09:00	-	-	-	-	4	-	-	-	-	-	-	-	**4**	16
09:00	09:15	-	-	-	-	1	-	-	-	-	-	1	-	**2**	
09:15	09:30	-	-	-	-	1	-	-	-	-	-	-	-	**1**	
09:30	09:45	-	-	-	-	2	-	-	-	-	-	-	-	**2**	
09:45	10:00	-	-	-	-	1	-	-	-	-	-	2	-	**3**	8
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	6
10:15	10:30	-	-	-	-	-	-	-	-	-	-	2	-	**2**	7
10:30	10:45	-	-	-	-	-	-	-	-	-	-	2	-	**2**	7
10:45	11:00	-	-	-	-	2	-	-	-	-	-	-	-	**2**	6
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	6
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	4
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	2
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	1	-	**1**	1
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
12:45	13:00	-	-	-	-	-	-	-	-	-	-	2	-	**2**	3
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	3
13:15	13:30	-	-	-	-	2	-	-	-	-	-	2	-	**4**	6
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	6
13:45	14:00	-	-	-	-	-	-	-	-	-	-	1	-	**1**	5
14:00	14:15	-	-	-	-	-	-	-	-	-	-	1	-	**1**	6
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	2
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	2
14:45	15:00	-	-	-	-	2	-	-	-	-	-	1	-	**3**	4
15:00	15:15	-	-	-	-	3	-	-	-	-	-	2	-	**5**	
15:15	15:30	-	-	-	-	11	-	-	-	-	-	-	-	**11**	
15:30	15:45	-	-	-	-	2	-	-	-	-	-	1	-	**3**	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	3	-	**3**	22
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	17
16:15	16:30	-	-	-	-	1	-	-	-	-	-	5	-	**6**	12
16:30	16:45	-	-	-	-	2	-	-	-	-	-	2	-	**4**	13
16:45	17:00	-	-	-	-	1	-	-	-	-	-	-	-	**1**	11
17:00	17:15	-	-	-	-	2	-	-	-	-	-	3	-	**5**	16
17:15	17:30	-	-	-	-	2	-	-	-	-	-	1	-	**3**	13
17:30	17:45	-	-	-	-	1	-	-	-	-	-	2	-	**3**	12
17:45	18:00	-	-	-	-	2	-	-	-	-	-	1	-	**3**	14
TOTAL		**-**	**-**	**-**	**-**	**63**	**-**	**-**	**-**	**-**	**-**	**81**	**-**	**144**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	-	-	-	-	9	-	-	-	-	-	29	-	**38**	**AM PEAK**
06:45	07:45	-	-	-	-	0.45	-	-	-	-	-	0.45	-	**0.59**	**AM PHF**
09:00	10:00	-	-	-	-	5	-	-	-	-	-	3	-	**8**	**MID PEAK**
09:00	10:00	-	-	-	-	0.62	-	-	-	-	-	0.38	-	**0.67**	**MID PHF**
15:00	16:00	-	-	-	-	16	-	-	-	-	-	6	-	**22**	**PM PEAK**
15:00	16:00	-	-	-	-	0.36	-	-	-	-	-	0.50	-	**0.50**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	25	-	-	-	-	-	46	-	**71**	**AM TOTAL**
09:00	15:00	-	-	-	-	11	-	-	-	-	-	15	-	**26**	**MID TOTAL**
15:00	18:00	-	-	-	-	27	-	-	-	-	-	20	-	**47**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R57 East of N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P4	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:00	07:15	-	-	-	-	1	-	-	-	-	-	-	-	1	1
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:30	08:45	-	-	-	-	1	-	-	-	-	-	-	-	1	1
08:45	09:00	-	-	-	-	1	-	-	-	-	-	-	-	1	2
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:00	12:15	-	-	-	-	-	-	-	-	-	-	1	-	1	1
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
12:45	13:00	-	-	-	-	1	-	-	-	-	-	1	-	2	3
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
15:00	15:15	-	-	-	-	-	-	-	-	-	-	1	-	1	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:15	17:30	-	-	-	-	-	-	-	-	-	-	2	-	2	2
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
TOTAL		-	-	-	-	4	-	-	-	-	-	5	-	9	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
08:00	09:00	-	-	-	-	2	-	-	-	-	-	-	-	2	AM PEAK
08:00	09:00	-	-	-	-	0.50	-	-	-	-	-	-	-	0.50	AM PHF
12:00	13:00	-	-	-	-	1	-	-	-	-	-	2	-	3	MID PEAK
12:00	13:00	-	-	-	-	0.25	-	-	-	-	-	0.50	-	0.38	MID PHF
16:30	17:30	-	-	-	-	-	-	-	-	-	-	2	-	2	PM PEAK
16:30	17:30	-	-	-	-	-	-	-	-	-	-	0.25	-	0.25	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	3	-	-	-	-	-	-	-	3	AM TOTAL
09:00	15:00	-	-	-	-	1	-	-	-	-	-	2	-	3	MID TOTAL
15:00	18:00	-	-	-	-	-	-	-	-	-	-	3	-	3	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	R57 East of N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P4	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	9	-	-	-	-	-	7	-	**16**	
06:15	06:30	-	-	-	-	6	-	-	-	-	-	5	-	**11**	
06:30	06:45	-	-	-	-	8	-	-	-	-	-	6	-	**14**	
06:45	07:00	-	-	-	-	8	-	-	-	-	-	9	-	**17**	58
07:00	07:15	-	-	-	-	7	-	-	-	-	-	5	-	**12**	54
07:15	07:30	-	-	-	-	4	-	-	-	-	-	9	-	**13**	56
07:30	07:45	-	-	-	-	8	-	-	-	-	-	4	-	**12**	54
07:45	08:00	-	-	-	-	8	-	-	-	-	-	4	-	**12**	49
08:00	08:15	-	-	-	-	12	-	-	-	-	-	3	-	**15**	52
08:15	08:30	-	-	-	-	6	-	-	-	-	-	7	-	**13**	52
08:30	08:45	-	-	-	-	5	-	-	-	-	-	1	-	**6**	46
08:45	09:00	-	-	-	-	5	-	-	-	-	-	6	-	**11**	45
09:00	09:15	-	-	-	-	10	-	-	-	-	-	9	-	**19**	
09:15	09:30	-	-	-	-	5	-	-	-	-	-	9	-	**14**	
09:30	09:45	-	-	-	-	5	-	-	-	-	-	6	-	**11**	
09:45	10:00	-	-	-	-	1	-	-	-	-	-	10	-	**11**	55
10:00	10:15	-	-	-	-	7	-	-	-	-	-	6	-	**13**	49
10:15	10:30	-	-	-	-	6	-	-	-	-	-	13	-	**19**	54
10:30	10:45	-	-	-	-	6	-	-	-	-	-	9	-	**15**	58
10:45	11:00	-	-	-	-	10	-	-	-	-	-	13	-	**23**	70
11:00	11:15	-	-	-	-	10	-	-	-	-	-	12	-	**22**	79
11:15	11:30	-	-	-	-	9	-	-	-	-	-	10	-	**19**	79
11:30	11:45	-	-	-	-	6	-	-	-	-	-	11	-	**17**	81
11:45	12:00	-	-	-	-	8	-	-	-	-	-	15	-	**23**	81
12:00	12:15	-	-	-	-	9	-	-	-	-	-	10	-	**19**	78
12:15	12:30	-	-	-	-	7	-	-	-	-	-	10	-	**17**	76
12:30	12:45	-	-	-	-	11	-	-	-	-	-	15	-	**26**	85
12:45	13:00	-	-	-	-	8	-	-	-	-	-	1	-	**9**	71
13:00	13:15	-	-	-	-	5	-	-	-	-	-	15	-	**20**	72
13:15	13:30	-	-	-	-	12	-	-	-	-	-	12	-	**24**	79
13:30	13:45	-	-	-	-	9	-	-	-	-	-	10	-	**19**	72
13:45	14:00	-	-	-	-	11	-	-	-	-	-	5	-	**16**	79
14:00	14:15	-	-	-	-	6	-	-	-	-	-	6	-	**12**	71
14:15	14:30	-	-	-	-	24	-	-	-	-	-	8	-	**32**	79
14:30	14:45	-	-	-	-	9	-	-	-	-	-	4	-	**13**	73
14:45	15:00	-	-	-	-	14	-	-	-	-	-	5	-	**19**	76
15:00	15:15	-	-	-	-	16	-	-	-	-	-	2	-	**18**	
15:15	15:30	-	-	-	-	7	-	-	-	-	-	9	-	**16**	
15:30	15:45	-	-	-	-	6	-	-	-	-	-	9	-	**15**	
15:45	16:00	-	-	-	-	12	-	-	-	-	-	4	-	**16**	65
16:00	16:15	-	-	-	-	4	-	-	-	-	-	8	-	**12**	59
16:15	16:30	-	-	-	-	5	-	-	-	-	-	10	-	**15**	58
16:30	16:45	-	-	-	-	8	-	-	-	-	-	6	-	**14**	57
16:45	17:00	-	-	-	-	8	-	-	-	-	-	5	-	**13**	54
17:00	17:15	-	-	-	-	8	-	-	-	-	-	5	-	**13**	55
17:15	17:30	-	-	-	-	6	-	-	-	-	-	5	-	**11**	51
17:30	17:45	-	-	-	-	4	-	-	-	-	-	12	-	**16**	53
17:45	18:00	-	-	-	-	7	-	-	-	-	-	6	-	**13**	53
TOTAL		-	-	-	-	**385**	-	-	-	-	-	**371**	-	**756**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	07:00	-	-	-	-	31	-	-	-	-	-	27	-	**58**	**AM PEAK**
06:00	07:00	-	-	-	-	0.86	-	-	-	-	-	0.75	-	**0.85**	**AM PHF**
11:45	12:45	-	-	-	-	35	-	-	-	-	-	50	-	**85**	**MID PEAK**
11:45	12:45	-	-	-	-	0.80	-	-	-	-	-	0.83	-	**0.82**	**MID PHF**
15:00	16:00	-	-	-	-	41	-	-	-	-	-	24	-	**65**	**PM PEAK**
15:00	16:00	-	-	-	-	0.64	-	-	-	-	-	0.67	-	**0.90**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	86	-	-	-	-	-	66	-	**152**	**AM TOTAL**
09:00	15:00	-	-	-	-	208	-	-	-	-	-	224	-	**432**	**MID TOTAL**
15:00	18:00	-	-	-	-	91	-	-	-	-	-	81	-	**172**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D1017 & UNKNOWN RD				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P5	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

OVERVIEW MAP & VIDEO FRAME

JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND

D1017

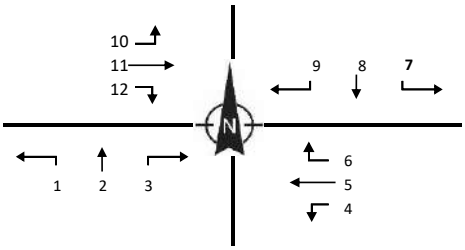
NORTHERN APPROACH / SOUTHBOUND

SOUTHERN APPROACH / NORTHBOUND

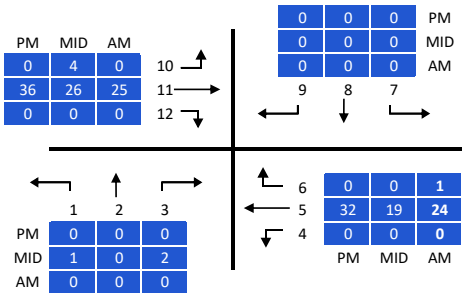
UNKNOWN RD

EASTERN APPROACH / WESTBOUND

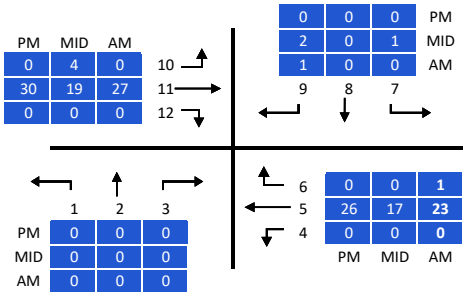
D1017



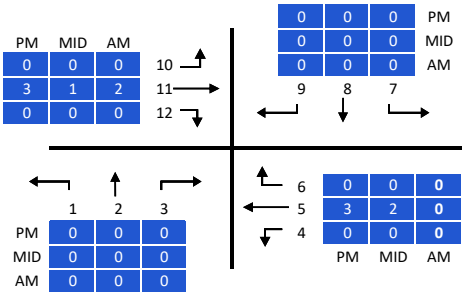
TOTAL VEHICLES SUMMARY



LIGHT VEHICLES



MINI BUS TAXI



BUSSES

HEAVY VEHICLES

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D1017 & UNKNOWN RD				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P5	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	1	-	-	-	-	-	1	-	**2**	
06:15	06:30	-	-	-	-	6	-	-	-	-	-	5	-	**11**	
06:30	06:45	-	-	-	-	4	-	-	-	-	-	14	-	**18**	
06:45	07:00	-	-	-	-	3	-	-	-	-	-	6	-	**9**	40
07:00	07:15	-	-	-	-	8	-	-	-	-	-	7	-	**15**	53
07:15	07:30	-	-	1	-	8	-	-	-	-	-	7	-	**16**	58
07:30	07:45	-	-	-	-	5	1	-	-	-	-	5	-	**11**	51
07:45	08:00	-	-	-	-	5	-	-	-	-	-	9	-	**14**	56
08:00	08:15	-	-	-	-	3	-	-	-	-	-	7	-	**10**	51
08:15	08:30	-	-	-	-	7	1	-	-	-	1	5	-	**14**	49
08:30	08:45	-	-	-	-	3	-	-	-	-	-	4	-	**7**	45
08:45	09:00	-	-	-	-	8	-	-	-	-	-	3	-	**11**	42
09:00	09:15	-	-	-	-	2	-	-	-	-	-	3	-	**5**	
09:15	09:30	1	-	-	-	8	-	-	-	-	-	5	-	**14**	
09:30	09:45	-	-	-	-	5	-	-	-	-	-	3	-	**8**	
09:45	10:00	-	-	1	-	4	-	-	-	-	2	4	-	**11**	38
10:00	10:15	1	-	-	-	5	-	-	-	-	1	6	-	**13**	46
10:15	10:30	-	-	-	-	2	-	-	-	-	-	6	-	**8**	40
10:30	10:45	-	-	-	-	4	-	-	-	-	-	8	-	**12**	44
10:45	11:00	-	-	1	-	4	-	-	-	-	-	9	-	**14**	47
11:00	11:15	-	-	-	-	9	-	-	-	-	-	4	-	**13**	47
11:15	11:30	-	-	-	-	3	-	-	-	-	-	6	-	**9**	48
11:30	11:45	-	-	-	-	5	-	-	-	-	-	8	-	**13**	49
11:45	12:00	-	-	-	-	5	-	-	-	-	-	7	-	**12**	47
12:00	12:15	-	-	-	-	3	-	-	-	-	-	-	-	**3**	37
12:15	12:30	-	-	-	-	1	-	-	-	-	-	5	-	**6**	34
12:30	12:45	-	-	-	-	3	-	-	-	-	-	5	-	**8**	29
12:45	13:00	-	-	-	-	7	-	-	-	-	-	7	-	**14**	31
13:00	13:15	-	-	-	-	4	-	-	-	-	-	3	-	**7**	35
13:15	13:30	-	-	-	-	5	-	-	-	-	-	8	-	**13**	42
13:30	13:45	-	-	-	-	3	-	-	-	-	-	2	-	**5**	39
13:45	14:00	-	-	-	-	4	-	-	-	-	-	3	-	**7**	32
14:00	14:15	1	-	-	-	3	-	-	-	-	1	4	-	**9**	34
14:15	14:30	-	-	1	-	5	-	-	-	-	1	8	-	**15**	36
14:30	14:45	-	-	1	-	6	-	-	-	-	-	7	-	**14**	45
14:45	15:00	-	-	-	-	5	-	-	-	-	2	7	-	**14**	52
15:00	15:15	-	-	-	-	5	-	-	-	-	-	5	-	**10**	
15:15	15:30	-	-	-	-	9	-	-	-	-	-	8	-	**17**	
15:30	15:45	-	-	-	-	5	-	-	-	-	-	5	-	**10**	
15:45	16:00	-	-	-	-	4	-	-	-	-	-	1	-	**5**	42
16:00	16:15	-	-	1	-	5	-	-	-	-	-	4	-	**10**	42
16:15	16:30	-	-	-	-	5	-	-	-	-	-	6	-	**11**	36
16:30	16:45	-	-	-	-	11	-	-	-	-	-	10	-	**21**	47
16:45	17:00	-	-	-	-	4	-	-	-	-	-	13	-	**17**	59
17:00	17:15	-	-	-	-	7	-	-	-	-	-	9	-	**16**	65
17:15	17:30	-	-	-	-	10	-	-	-	-	-	4	-	**14**	68
17:30	17:45	-	-	-	-	10	-	-	-	-	-	6	-	**16**	63
17:45	18:00	1	-	-	-	10	-	-	-	-	-	8	-	**19**	65
TOTAL		**4**	**-**	**6**	**-**	**251**	**2**	**-**	**-**	**-**	**8**	**280**	**-**	**551**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	-	-		-	24	1				-	25	-	**50**	**AM PEAK**
06:30	07:30	-	-	0.25	-	0.72	-				-	0.61	-	**0.81**	**AM PHF**
14:00	15:00	1	-	2	-	19	-				4	26	-	**52**	**MID PEAK**
14:00	15:00	0.25	-	0.50	-	0.79	-				0.50	0.81	-	**0.87**	**MID PHF**
16:30	17:30	-	-	-	-	32	-				-	36	-	**68**	**PM PEAK**
16:30	17:30	-	-	-	-	0.73	-				-	0.69	-	**0.81**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	1	-	61	2	-	-	-	1	73	-	**138**	**AM TOTAL**
09:00	15:00	3	-	4	-	105	-	-	-	-	7	128	-	**247**	**MID TOTAL**
15:00	18:00	1	-	1	-	85	-	-	-	-	-	79	-	**166**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D1017 & UNKNOWN RD				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P5	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	1	-				-	1	-	**2**	
06:15	06:30	-	-	-	-	5	-				-	5	-	**10**	
06:30	06:45	-	-	-	-	4	-				-	11	-	**15**	
06:45	07:00	-	-	-	-	3	-				-	5	-	**8**	35
07:00	07:15	-	-	-	-	7	-				-	7	-	**14**	47
07:15	07:30	-	-	1	-	7	-				-	6	-	**14**	51
07:30	07:45	-	-	-	-	4	1				-	5	-	**10**	46
07:45	08:00	-	-	-	-	5	-				-	9	-	**14**	52
08:00	08:15	-	-	-	-	3	-				-	4	-	**7**	45
08:15	08:30	-	-	-	-	6	1				1	5	-	**13**	44
08:30	08:45	-	-	-	-	2	-				-	2	-	**4**	38
08:45	09:00	-	-	-	-	8	-				-	3	-	**11**	35
09:00	09:15	-	-	-	-	2	-				-	1	-	**3**	
09:15	09:30	1	-	-	-	6	-				-	4	-	**11**	
09:30	09:45	-	-	-	-	4	-				-	2	-	**6**	
09:45	10:00	-	-	1	-	4	-				2	4	-	**11**	31
10:00	10:15	1	-	-	-	4	-				1	6	-	**12**	40
10:15	10:30	-	-	-	-	2	-				-	2	-	**4**	33
10:30	10:45	-	-	-	-	3	-				-	7	-	**10**	37
10:45	11:00	-	-	1	-	3	-				-	6	-	**10**	36
11:00	11:15	-	-	-	-	6	-				-	4	-	**10**	34
11:15	11:30	-	-	-	-	2	-				-	5	-	**7**	37
11:30	11:45	-	-	-	-	3	-				-	8	-	**11**	38
11:45	12:00	-	-	-	-	4	-				-	7	-	**11**	39
12:00	12:15	-	-	-	-	3	-				-	-	-	**3**	32
12:15	12:30	-	-	-	-	1	-				-	4	-	**5**	30
12:30	12:45	-	-	-	-	3	-				-	4	-	**7**	26
12:45	13:00	-	-	-	-	4	-				-	6	-	**10**	25
13:00	13:15	-	-	-	-	4	-				-	1	-	**5**	27
13:15	13:30	-	-	-	-	5	-				-	7	-	**12**	34
13:30	13:45	-	-	-	-	3	-				-	2	-	**5**	32
13:45	14:00	-	-	-	-	4	-				-	3	-	**7**	29
14:00	14:15	1	-	-	-	3	-				1	3	-	**8**	32
14:15	14:30	-	-	1	-	5	-				1	5	-	**12**	32
14:30	14:45	-	-	1	-	6	-				-	6	-	**13**	40
14:45	15:00	-	-	-	-	3	-				2	5	-	**10**	43
15:00	15:15	-	-	-	-	4	-				-	3	-	**7**	
15:15	15:30	-	-	-	-	9	-				-	7	-	**16**	
15:30	15:45	-	-	-	-	5	-				-	4	-	**9**	
15:45	16:00	-	-	-	-	3	-				-	1	-	**4**	36
16:00	16:15	-	-	1	-	5	-				-	4	-	**10**	39
16:15	16:30	-	-	-	-	5	-				-	4	-	**9**	32
16:30	16:45	-	-	-	-	8	-				-	6	-	**14**	37
16:45	17:00	-	-	-	-	3	-				-	13	-	**16**	49
17:00	17:15	-	-	-	-	6	-				-	7	-	**13**	52
17:15	17:30	-	-	-	-	9	-				-	4	-	**13**	56
17:30	17:45	-	-	-	-	7	-				-	6	-	**13**	55
17:45	18:00	1	-	-	-	6	-				-	8	-	**15**	54
TOTAL		**4**	**-**	**6**	**-**	**212**	**2**	**-**	**-**	**-**	**8**	**232**	**-**	**464**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
07:00	08:00	-	-	-	-	23	1	-	-	1	-	27	-	**52**	**AM PEAK**
07:00	08:00	-	-	-	-	0.82	0.25	-	-	0.25	-	0.75	-	**0.93**	**AM PHF**
14:00	15:00	-	-	-	-	17	-	1	-	2	4	19	-	**43**	**MID PEAK**
14:00	15:00	-	-	-	-	0.71	-	0.25	-	0.50	0.50	0.79	-	**0.83**	**MID PHF**
16:30	17:30	-	-	-	-	26	-	-	-	-	-	30	-	**56**	**PM PEAK**
16:30	17:30	-	-	-	-	0.72	-	-	-	-	-	0.58	-	**0.88**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	1	-	55	2	-	-	-	1	63	-	**122**	**AM TOTAL**
09:00	15:00	3	-	4	-	87	-	-	-	-	7	102	-	**203**	**MID TOTAL**
15:00	18:00	1	-	1	-	70	-	-	-	-	-	67	-	**139**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D1017 & UNKNOWN RD				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P5	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

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TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	1	-	-	-	-	-	-	-	1	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
07:15	07:30	-	-	-	-	-	-	-	-	-	-	1	-	1	1
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:00	08:15	-	-	-	-	-	-	-	-	-	-	1	-	1	2
08:15	08:30	-	-	-	-	1	-	-	-	-	-	-	-	1	2
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	1	-	1	1
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
11:15	11:30	-	-	-	-	-	-	-	-	-	-	1	-	1	1
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	1	-	1	1
12:45	13:00	-	-	-	-	2	-	-	-	-	-	-	-	2	3
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	3
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:45	15:00	-	-	-	-	1	-	-	-	-	-	-	-	1	1
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:15	16:30	-	-	-	-	-	-	-	-	-	-	2	-	2	2
16:30	16:45	-	-	-	-	2	-	-	-	-	-	1	-	3	5
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	5
17:00	17:15	-	-	-	-	1	-	-	-	-	-	-	-	1	6
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	4
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:45	18:00	-	-	-	-	1	-	-	-	-	-	-	-	1	2
TOTAL		-	-	-	-	9	-	-	-	-	-	8	-	17	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
07:15	08:15	-	-	-	-	-	-	-	-	-	-	2	-	2	AM PEAK
07:15	08:15	-	-	-	-	-	-	-	-	-	-	0.50	-	0.50	AM PHF
12:00	13:00	-	-	-	-	2	-	-	-	-	-	1	-	3	MID PEAK
12:00	13:00	-	-	-	-	0.25	-	-	-	-	-	0.25	-	0.38	MID PHF
16:15	17:15	-	-	-	-	3	-	-	-	-	-	3	-	6	PM PEAK
16:15	17:15	-	-	-	-	0.38	-	-	-	-	-	0.38	-	0.50	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	2	-	-	-	-	-	2	-	4	AM TOTAL
09:00	15:00	-	-	-	-	3	-	-	-	-	-	3	-	6	MID TOTAL
15:00	18:00	-	-	-	-	4	-	-	-	-	-	3	-	7	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D1017 & UNKNOWN RD				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P5	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
07:00	07:15	-	-	-	-	1	-	-	-	-	-	-	-	1	1
07:15	07:30	-	-	-	-	1	-	-	-	-	-	-	-	1	2
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14:15	14:30	-	-	-	-	-	-	-	-	-	-	1	-	1	1
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
15:00	15:15	-	-	-	-	-	-	-	-	-	-	1	-	1	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17:30	17:45	-	-	-	-	1	-	-	-	-	-	-	-	1	1
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
TOTAL		-	-	-	-	3	-	-	-	-	-	2	-	5	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:30	07:30	-	-	-	-	2	-	-	-	-	-	-	-	2	AM PEAK
06:30	07:30	-	-	-	-	0.50	-	-	-	-	-	-	-	0.50	AM PHF
13:30	14:30	-	-	-	-	-	-	-	-	-	-	1	-	1	MID PEAK
13:30	14:30	-	-	-	-	-	-	-	-	-	-	0.25	-	0.25	MID PHF
15:00	16:00	-	-	-	-	-	-	-	-	-	-	1	-	1	PM PEAK
15:00	16:00	-	-	-	-	-	-	-	-	-	-	0.25	-	0.25	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	2	-	-	-	-	-	-	-	2	AM TOTAL
09:00	15:00	-	-	-	-	-	-	-	-	-	-	1	-	1	MID TOTAL
15:00	18:00	-	-	-	-	1	-	-	-	-	-	1	-	2	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	D1017 & UNKNOWN RD				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P5	DATA:	J.A.V	TYPE:	TS-12H-6-18-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	3	-	3	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	1	-	1	4
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	4
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	4
07:30	07:45	-	-	-	-	1	-	-	-	-	-	-	-	1	2
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:00	08:15	-	-	-	-	-	-	-	-	-	-	2	-	2	3
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
08:30	08:45	-	-	-	-	1	-	-	-	-	-	2	-	3	5
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	5
09:00	09:15	-	-	-	-	-	-	-	-	-	-	2	-	2	
09:15	09:30	-	-	-	-	2	-	-	-	-	-	1	-	3	
09:30	09:45	-	-	-	-	1	-	-	-	-	-	1	-	2	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	7
10:00	10:15	-	-	-	-	1	-	-	-	-	-	-	-	1	6
10:15	10:30	-	-	-	-	-	-	-	-	-	-	3	-	3	6
10:30	10:45	-	-	-	-	1	-	-	-	-	-	1	-	2	6
10:45	11:00	-	-	-	-	1	-	-	-	-	-	3	-	4	10
11:00	11:15	-	-	-	-	3	-	-	-	-	-	-	-	3	12
11:15	11:30	-	-	-	-	1	-	-	-	-	-	-	-	1	10
11:30	11:45	-	-	-	-	2	-	-	-	-	-	-	-	2	10
11:45	12:00	-	-	-	-	1	-	-	-	-	-	-	-	1	7
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	4
12:15	12:30	-	-	-	-	-	-	-	-	-	-	1	-	1	4
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
12:45	13:00	-	-	-	-	1	-	-	-	-	-	1	-	2	3
13:00	13:15	-	-	-	-	-	-	-	-	-	-	2	-	2	5
13:15	13:30	-	-	-	-	-	-	-	-	-	-	1	-	1	5
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	5
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
14:00	14:15	-	-	-	-	-	-	-	-	-	-	1	-	1	2
14:15	14:30	-	-	-	-	-	-	-	-	-	-	2	-	2	3
14:30	14:45	-	-	-	-	-	-	-	-	-	-	1	-	1	4
14:45	15:00	-	-	-	-	1	-	-	-	-	-	2	-	3	7
15:00	15:15	-	-	-	-	1	-	-	-	-	-	1	-	2	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	1	-	1	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	1	-	1	
15:45	16:00	-	-	-	-	1	-	-	-	-	-	-	-	1	5
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	3
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
16:30	16:45	-	-	-	-	1	-	-	-	-	-	3	-	4	5
16:45	17:00	-	-	-	-	1	-	-	-	-	-	-	-	1	5
17:00	17:15	-	-	-	-	-	-	-	-	-	-	2	-	2	7
17:15	17:30	-	-	-	-	1	-	-	-	-	-	-	-	1	8
17:30	17:45	-	-	-	-	2	-	-	-	-	-	-	-	2	6
17:45	18:00	-	-	-	-	3	-	-	-	-	-	-	-	3	8
TOTAL		-	-	-	-	27	-	-	-	-	-	38	-	65	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
07:45	08:45	-	-	-	-	1	-	-	-	-	-	4	-	5	AM PEAK
07:45	08:45	-	-	-	-	0.25	-	-	-	-	-	0.50	-	0.42	AM PHF
10:15	11:15	-	-	-	-	5	-	-	-	-	-	7	-	12	MID PEAK
10:15	11:15	-	-	-	-	0.42	-	-	-	-	-	0.58	-	0.75	MID PHF
16:30	17:30	-	-	-	-	3	-	-	-	-	-	5	-	8	PM PEAK
16:30	17:30	-	-	-	-	0.75	-	-	-	-	-	0.42	-	0.50	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	2	-	-	-	-	-	8	-	10	AM TOTAL
09:00	15:00	-	-	-	-	15	-	-	-	-	-	22	-	37	MID TOTAL
15:00	18:00	-	-	-	-	10	-	-	-	-	-	8	-	18	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P6	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

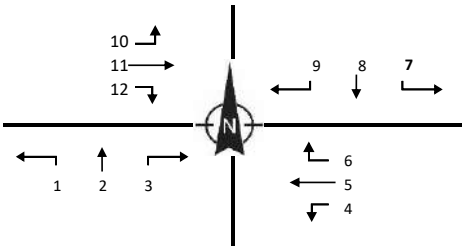
OVERVIEW MAP & VIDEO FRAME

JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND

NORTHERN APPROACH / SOUTHBOUND

N1

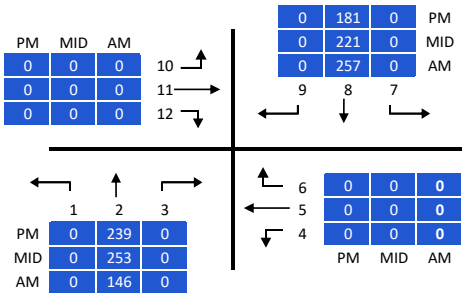


SOUTHERN APPROACH / NORTHBOUND

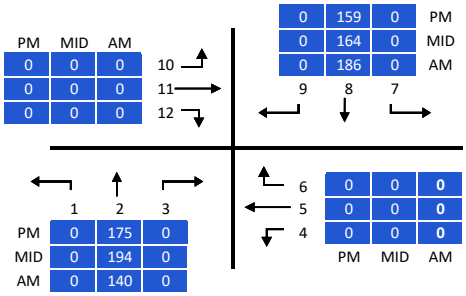
N1

EASTERN APPROACH / WESTBOUND

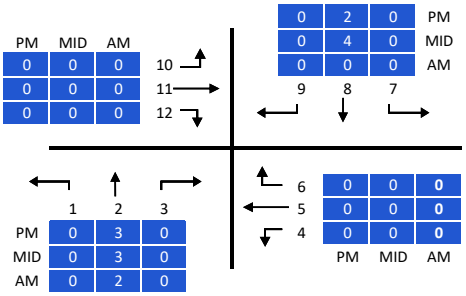
TOTAL VEHICLES SUMMARY



LIGHT VEHICLES



MINI BUS TAXI



BUSSES

HEAVY VEHICLES

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P6	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	30	-	-	-	-	-	65	-	-	-	-	95	
06:15	06:30	-	25	-	-	-	-	-	64	-	-	-	-	89	
06:30	06:45	-	32	-	-	-	-	-	62	-	-	-	-	94	
06:45	07:00	-	37	-	-	-	-	-	64	-	-	-	-	101	379
07:00	07:15	-	31	-	-	-	-	-	75	-	-	-	-	106	390
07:15	07:30	-	51	-	-	-	-	-	57	-	-	-	-	108	409
07:30	07:45	-	27	-	-	-	-	-	61	-	-	-	-	88	403
07:45	08:00	-	27	-	-	-	-	-	53	-	-	-	-	80	382
08:00	08:15	-	49	-	-	-	-	-	50	-	-	-	-	99	375
08:15	08:30	-	51	-	-	-	-	-	55	-	-	-	-	106	373
08:30	08:45	-	49	-	-	-	-	-	51	-	-	-	-	100	385
08:45	09:00	-	32	-	-	-	-	-	61	-	-	-	-	93	398
09:00	09:15	-	48	-	-	-	-	-	61	-	-	-	-	109	
09:15	09:30	-	49	-	-	-	-	-	48	-	-	-	-	97	
09:30	09:45	-	37	-	-	-	-	-	65	-	-	-	-	102	
09:45	10:00	-	40	-	-	-	-	-	54	-	-	-	-	94	402
10:00	10:15	-	38	-	-	-	-	-	47	-	-	-	-	85	378
10:15	10:30	-	63	-	-	-	-	-	58	-	-	-	-	121	402
10:30	10:45	-	59	-	-	-	-	-	64	-	-	-	-	123	423
10:45	11:00	-	40	-	-	-	-	-	34	-	-	-	-	74	403
11:00	11:15	-	49	-	-	-	-	-	50	-	-	-	-	99	417
11:15	11:30	-	37	-	-	-	-	-	41	-	-	-	-	78	374
11:30	11:45	-	56	-	-	-	-	-	57	-	-	-	-	113	364
11:45	12:00	-	52	-	-	-	-	-	65	-	-	-	-	117	407
12:00	12:15	-	46	-	-	-	-	-	47	-	-	-	-	93	401
12:15	12:30	-	62	-	-	-	-	-	50	-	-	-	-	112	435
12:30	12:45	-	50	-	-	-	-	-	39	-	-	-	-	89	411
12:45	13:00	-	66	-	-	-	-	-	71	-	-	-	-	137	431
13:00	13:15	-	59	-	-	-	-	-	56	-	-	-	-	115	453
13:15	13:30	-	70	-	-	-	-	-	45	-	-	-	-	115	456
13:30	13:45	-	58	-	-	-	-	-	49	-	-	-	-	107	474
13:45	14:00	-	52	-	-	-	-	-	52	-	-	-	-	104	441
14:00	14:15	-	55	-	-	-	-	-	46	-	-	-	-	101	427
14:15	14:30	-	61	-	-	-	-	-	47	-	-	-	-	108	420
14:30	14:45	-	58	-	-	-	-	-	49	-	-	-	-	107	420
14:45	15:00	-	68	-	-	-	-	-	44	-	-	-	-	112	428
15:00	15:15	-	58	-	-	-	-	-	42	-	-	-	-	100	
15:15	15:30	-	60	-	-	-	-	-	37	-	-	-	-	97	
15:30	15:45	-	53	-	-	-	-	-	48	-	-	-	-	101	
15:45	16:00	-	58	-	-	-	-	-	44	-	-	-	-	102	400
16:00	16:15	-	56	-	-	-	-	-	57	-	-	-	-	113	413
16:15	16:30	-	57	-	-	-	-	-	50	-	-	-	-	107	423
16:30	16:45	-	51	-	-	-	-	-	54	-	-	-	-	105	427
16:45	17:00	-	64	-	-	-	-	-	41	-	-	-	-	105	430
17:00	17:15	-	57	-	-	-	-	-	49	-	-	-	-	106	423
17:15	17:30	-	67	-	-	-	-	-	37	-	-	-	-	104	420
17:30	17:45	-	63	-	-	-	-	-	43	-	-	-	-	106	421
17:45	18:00	-	60	-	-	-	-	-	44	-	-	-	-	104	420
TOTAL		-	2 418	-	-	-	-	-	2 503	-	-	-	-	4 921	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	-	146	-	-	-	-	-	257	-	-	-	-	403	AM PEAK
06:30	07:30	-	0.74	-	-	-	-	-	0.86	-	-	-	-	0.95	AM PHF
12:45	13:45	-	253	-	-	-	-	-	221	-	-	-	-	474	MID PEAK
12:45	13:45	-	0.90	-	-	-	-	-	0.78	-	-	-	-	0.86	MID PHF
16:30	17:30	-	239	-	-	-	-	-	181	-	-	-	-	420	PM PEAK
16:00	17:00	-	0.89	-	-	-	-	-	0.89	-	-	-	-	0.95	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	441	-	-	-	-	-	718	-	-	-	-	1 159	AM TOTAL
09:00	15:00	-	1 273	-	-	-	-	-	1 239	-	-	-	-	2 512	MID TOTAL
15:00	18:00	-	704	-	-	-	-	-	546	-	-	-	-	1 250	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P6	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	20	-	-	-	-	-	55	-	-	-	-	**75**	
06:15	06:30	-	17	-	-	-	-	-	48	-	-	-	-	**65**	
06:30	06:45	-	22	-	-	-	-	-	47	-	-	-	-	**69**	
06:45	07:00	-	28	-	-	-	-	-	52	-	-	-	-	**80**	289
07:00	07:15	-	23	-	-	-	-	-	60	-	-	-	-	**83**	297
07:15	07:30	-	34	-	-	-	-	-	51	-	-	-	-	**85**	317
07:30	07:45	-	21	-	-	-	-	-	50	-	-	-	-	**71**	319
07:45	08:00	-	20	-	-	-	-	-	41	-	-	-	-	**61**	300
08:00	08:15	-	36	-	-	-	-	-	41	-	-	-	-	**77**	294
08:15	08:30	-	40	-	-	-	-	-	50	-	-	-	-	**90**	299
08:30	08:45	-	38	-	-	-	-	-	49	-	-	-	-	**87**	315
08:45	09:00	-	26	-	-	-	-	-	46	-	-	-	-	**72**	326
09:00	09:15	-	34	-	-	-	-	-	48	-	-	-	-	**82**	
09:15	09:30	-	38	-	-	-	-	-	40	-	-	-	-	**78**	
09:30	09:45	-	23	-	-	-	-	-	51	-	-	-	-	**74**	
09:45	10:00	-	35	-	-	-	-	-	43	-	-	-	-	**78**	312
10:00	10:15	-	28	-	-	-	-	-	33	-	-	-	-	**61**	291
10:15	10:30	-	43	-	-	-	-	-	45	-	-	-	-	**88**	301
10:30	10:45	-	42	-	-	-	-	-	55	-	-	-	-	**97**	324
10:45	11:00	-	30	-	-	-	-	-	26	-	-	-	-	**56**	302
11:00	11:15	-	39	-	-	-	-	-	42	-	-	-	-	**81**	322
11:15	11:30	-	26	-	-	-	-	-	35	-	-	-	-	**61**	295
11:30	11:45	-	43	-	-	-	-	-	46	-	-	-	-	**89**	287
11:45	12:00	-	36	-	-	-	-	-	52	-	-	-	-	**88**	319
12:00	12:15	-	39	-	-	-	-	-	37	-	-	-	-	**76**	314
12:15	12:30	-	43	-	-	-	-	-	39	-	-	-	-	**82**	335
12:30	12:45	-	35	-	-	-	-	-	30	-	-	-	-	**65**	311
12:45	13:00	-	50	-	-	-	-	-	53	-	-	-	-	**103**	326
13:00	13:15	-	45	-	-	-	-	-	40	-	-	-	-	**85**	335
13:15	13:30	-	54	-	-	-	-	-	33	-	-	-	-	**87**	340
13:30	13:45	-	45	-	-	-	-	-	38	-	-	-	-	**83**	358
13:45	14:00	-	35	-	-	-	-	-	37	-	-	-	-	**72**	327
14:00	14:15	-	43	-	-	-	-	-	33	-	-	-	-	**76**	318
14:15	14:30	-	48	-	-	-	-	-	33	-	-	-	-	**81**	312
14:30	14:45	-	42	-	-	-	-	-	37	-	-	-	-	**79**	308
14:45	15:00	-	48	-	-	-	-	-	38	-	-	-	-	**86**	322
15:00	15:15	-	43	-	-	-	-	-	28	-	-	-	-	**71**	
15:15	15:30	-	41	-	-	-	-	-	27	-	-	-	-	**68**	
15:30	15:45	-	39	-	-	-	-	-	36	-	-	-	-	**75**	
15:45	16:00	-	40	-	-	-	-	-	32	-	-	-	-	**72**	286
16:00	16:15	-	42	-	-	-	-	-	44	-	-	-	-	**86**	301
16:15	16:30	-	48	-	-	-	-	-	37	-	-	-	-	**85**	318
16:30	16:45	-	40	-	-	-	-	-	45	-	-	-	-	**85**	328
16:45	17:00	-	45	-	-	-	-	-	33	-	-	-	-	**78**	334
17:00	17:15	-	44	-	-	-	-	-	34	-	-	-	-	**78**	326
17:15	17:30	-	46	-	-	-	-	-	26	-	-	-	-	**72**	313
17:30	17:45	-	48	-	-	-	-	-	28	-	-	-	-	**76**	304
17:45	18:00	-	44	-	-	-	-	-	28	-	-	-	-	**72**	298
TOTAL		-	**1 789**	-	-	-	-	-	**1 952**	-	-	-	-	**3 741**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
08:00	09:00	-	140	-	-	-	-	-	186	-	-	-	-	**326**	**AM PEAK**
08:00	09:00	-	0.88	-	-	-	-	-	0.93	-	-	-	-	**0.91**	**AM PHF**
12:45	13:45	-	194	-	-	-	-	-	164	-	-	-	-	**358**	**MID PEAK**
12:45	13:45	-	0.90	-	-	-	-	-	0.77	-	-	-	-	**0.87**	**MID PHF**
16:00	17:00	-	175	-	-	-	-	-	159	-	-	-	-	**334**	**PM PEAK**
16:00	17:00	-	0.91	-	-	-	-	-	0.88	-	-	-	-	**0.97**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	325	-	-	-	-	-	590	-	-	-	-	**915**	**AM TOTAL**
09:00	15:00	-	944	-	-	-	-	-	964	-	-	-	-	**1 908**	**MID TOTAL**
15:00	18:00	-	520	-	-	-	-	-	398	-	-	-	-	**918**	**PM TOTAL**

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P6	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

unitraf

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:45	07:00	-	2	-	-	-	-	-	-	-	-	-	-	2	2
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
07:45	08:00	-	-	-	-	-	-	-	1	-	-	-	-	1	1
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:45	09:00	-	-	-	-	-	-	-	1	-	-	-	-	1	1
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	1	-	-	-	-	-	1	-	-	-	-	2	
09:45	10:00	-	-	-	-	-	-	-	1	-	-	-	-	1	3
10:00	10:15	-	-	-	-	-	-	-	1	-	-	-	-	1	4
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	4
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
11:00	11:15	-	-	-	-	-	-	-	2	-	-	-	-	2	2
11:15	11:30	-	1	-	-	-	-	-	-	-	-	-	-	1	3
11:30	11:45	-	1	-	-	-	-	-	-	-	-	-	-	1	4
11:45	12:00	-	-	-	-	-	-	-	1	-	-	-	-	1	5
12:00	12:15	-	1	-	-	-	-	-	1	-	-	-	-	2	5
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	4
12:30	12:45	-	1	-	-	-	-	-	-	-	-	-	-	1	4
12:45	13:00	-	-	-	-	-	-	-	1	-	-	-	-	1	4
13:00	13:15	-	1	-	-	-	-	-	2	-	-	-	-	3	5
13:15	13:30	-	1	-	-	-	-	-	-	-	-	-	-	1	6
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	5
13:45	14:00	-	1	-	-	-	-	-	2	-	-	-	-	3	7
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	4
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	3
14:45	15:00	-	-	-	-	-	-	-	1	-	-	-	-	1	1
15:00	15:15	-	-	-	-	-	-	-	2	-	-	-	-	2	
15:15	15:30	-	1	-	-	-	-	-	-	-	-	-	-	1	
15:30	15:45	-	-	-	-	-	-	-	1	-	-	-	-	1	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	4
16:00	16:15	-	1	-	-	-	-	-	-	-	-	-	-	1	3
16:15	16:30	-	1	-	-	-	-	-	1	-	-	-	-	2	4
16:30	16:45	-	-	-	-	-	-	-	1	-	-	-	-	1	4
16:45	17:00	-	1	-	-	-	-	-	-	-	-	-	-	1	5
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	4
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	2
17:30	17:45	-	1	-	-	-	-	-	-	-	-	-	-	1	2
17:45	18:00	-	-	-	-	-	-	-	4	-	-	-	-	4	5
TOTAL		-	15	-	-	-	-	-	24	-	-	-	-	39	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	07:00	-	2	-	-	-	-	-	-	-	-	-	-	2	AM PEAK
06:00	07:00	-	0.25	-	-	-	-	-	-	-	-	-	-	0.25	AM PHF
13:00	14:00	-	3	-	-	-	-	-	4	-	-	-	-	7	MID PEAK
13:00	14:00	-	0.75	-	-	-	-	-	0.50	-	-	-	-	0.58	MID PHF
16:00	17:00	-	3	-	-	-	-	-	2	-	-	-	-	5	PM PEAK
16:00	17:00	-	0.75	-	-	-	-	-	0.50	-	-	-	-	0.63	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	2	-	-	-	-	-	2	-	-	-	-	4	AM TOTAL
09:00	15:00	-	8	-	-	-	-	-	13	-	-	-	-	21	MID TOTAL
15:00	18:00	-	5	-	-	-	-	-	9	-	-	-	-	14	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P6	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	1	-	-	-	-	-	-	-	-	-	-	1	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
06:30	06:45	-	2	-	-	-	-	-	-	-	-	-	-	2	
06:45	07:00	-	1	-	-	-	-	-	-	-	-	-	-	1	4
07:00	07:15	-	1	-	-	-	-	-	1	-	-	-	-	2	5
07:15	07:30	-	1	-	-	-	-	-	-	-	-	-	-	1	6
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	4
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08:15	08:30	-	-	-	-	-	-	-	2	-	-	-	-	2	2
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	-	2
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	
09:30	09:45	-	1	-	-	-	-	-	-	-	-	-	-	1	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11:00	11:15	-	2	-	-	-	-	-	1	-	-	-	-	3	3
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
11:30	11:45	-	3	-	-	-	-	-	-	-	-	-	-	3	6
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	6
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	3
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
12:30	12:45	-	2	-	-	-	-	-	-	-	-	-	-	2	2
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	2
13:00	13:15	-	-	-	-	-	-	-	1	-	-	-	-	1	3
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	-	3
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	1
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
14:00	14:15	-	1	-	-	-	-	-	2	-	-	-	-	3	3
14:15	14:30	-	-	-	-	-	-	-	1	-	-	-	-	1	4
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	-	4
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	4
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	
15:15	15:30	-	1	-	-	-	-	-	1	-	-	-	-	2	
15:30	15:45	-	-	-	-	-	-	-	1	-	-	-	-	1	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	3
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	-	3
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
16:30	16:45	-	1	-	-	-	-	-	-	-	-	-	-	1	1
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17:30	17:45	-	-	-	-	-	-	-	1	-	-	-	-	1	1
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	1
TOTAL		-	17	-	-	-	-	-	11	-	-	-	-	28	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:30	07:30	-	5	-	-	-	-	-	1	-	-	-	-	6	AM PEAK
06:30	07:30	-	0.62	-	-	-	-	-	0.25	-	-	-	-	0.75	AM PHF
10:45	11:45	-	5	-	-	-	-	-	1	-	-	-	-	6	MID PEAK
10:45	11:45	-	0.42	-	-	-	-	-	0.25	-	-	-	-	0.50	MID PHF
15:00	16:00	-	1	-	-	-	-	-	2	-	-	-	-	3	PM PEAK
15:00	16:00	-	0.25	-	-	-	-	-	0.50	-	-	-	-	0.38	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	6	-	-	-	-	-	3	-	-	-	-	9	AM TOTAL
09:00	15:00	-	9	-	-	-	-	-	5	-	-	-	-	14	MID TOTAL
15:00	18:00	-	2	-	-	-	-	-	3	-	-	-	-	5	PM TOTAL

LOCATION:	VAAL AIRPORT	PROJECT TITLE:	VAAL AIRPORT-TRAFFIC COUNT				
PROJECT NR:	UT2024-3242	INTERSECTION:	N1				
SURVEY DATE:	Tuesday, 22 October 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P6	DATA:	J.A.V	TYPE:	LC-12H-6-18-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	9	-	-	-	-	-	10	-	-	-	-	**19**	
06:15	06:30	-	8	-	-	-	-	-	16	-	-	-	-	**24**	
06:30	06:45	-	8	-	-	-	-	-	15	-	-	-	-	**23**	
06:45	07:00	-	6	-	-	-	-	-	12	-	-	-	-	**18**	84
07:00	07:15	-	7	-	-	-	-	-	14	-	-	-	-	**21**	86
07:15	07:30	-	16	-	-	-	-	-	6	-	-	-	-	**22**	84
07:30	07:45	-	6	-	-	-	-	-	11	-	-	-	-	**17**	78
07:45	08:00	-	7	-	-	-	-	-	11	-	-	-	-	**18**	78
08:00	08:15	-	13	-	-	-	-	-	9	-	-	-	-	**22**	79
08:15	08:30	-	11	-	-	-	-	-	3	-	-	-	-	**14**	71
08:30	08:45	-	11	-	-	-	-	-	2	-	-	-	-	**13**	67
08:45	09:00	-	6	-	-	-	-	-	14	-	-	-	-	**20**	69
09:00	09:15	-	14	-	-	-	-	-	13	-	-	-	-	**27**	
09:15	09:30	-	11	-	-	-	-	-	8	-	-	-	-	**19**	
09:30	09:45	-	12	-	-	-	-	-	13	-	-	-	-	**25**	
09:45	10:00	-	5	-	-	-	-	-	10	-	-	-	-	**15**	86
10:00	10:15	-	10	-	-	-	-	-	13	-	-	-	-	**23**	82
10:15	10:30	-	20	-	-	-	-	-	13	-	-	-	-	**33**	96
10:30	10:45	-	17	-	-	-	-	-	9	-	-	-	-	**26**	97
10:45	11:00	-	10	-	-	-	-	-	8	-	-	-	-	**18**	100
11:00	11:15	-	8	-	-	-	-	-	5	-	-	-	-	**13**	90
11:15	11:30	-	10	-	-	-	-	-	6	-	-	-	-	**16**	73
11:30	11:45	-	9	-	-	-	-	-	11	-	-	-	-	**20**	67
11:45	12:00	-	16	-	-	-	-	-	12	-	-	-	-	**28**	77
12:00	12:15	-	6	-	-	-	-	-	9	-	-	-	-	**15**	79
12:15	12:30	-	19	-	-	-	-	-	11	-	-	-	-	**30**	93
12:30	12:45	-	12	-	-	-	-	-	9	-	-	-	-	**21**	94
12:45	13:00	-	16	-	-	-	-	-	17	-	-	-	-	**33**	99
13:00	13:15	-	13	-	-	-	-	-	13	-	-	-	-	**26**	110
13:15	13:30	-	15	-	-	-	-	-	12	-	-	-	-	**27**	107
13:30	13:45	-	13	-	-	-	-	-	11	-	-	-	-	**24**	110
13:45	14:00	-	16	-	-	-	-	-	13	-	-	-	-	**29**	106
14:00	14:15	-	11	-	-	-	-	-	11	-	-	-	-	**22**	102
14:15	14:30	-	13	-	-	-	-	-	13	-	-	-	-	**26**	101
14:30	14:45	-	16	-	-	-	-	-	12	-	-	-	-	**28**	105
14:45	15:00	-	20	-	-	-	-	-	5	-	-	-	-	**25**	101
15:00	15:15	-	15	-	-	-	-	-	12	-	-	-	-	**27**	
15:15	15:30	-	17	-	-	-	-	-	9	-	-	-	-	**26**	
15:30	15:45	-	14	-	-	-	-	-	10	-	-	-	-	**24**	
15:45	16:00	-	18	-	-	-	-	-	12	-	-	-	-	**30**	107
16:00	16:15	-	13	-	-	-	-	-	13	-	-	-	-	**26**	106
16:15	16:30	-	8	-	-	-	-	-	12	-	-	-	-	**20**	100
16:30	16:45	-	10	-	-	-	-	-	8	-	-	-	-	**18**	94
16:45	17:00	-	18	-	-	-	-	-	8	-	-	-	-	**26**	90
17:00	17:15	-	13	-	-	-	-	-	15	-	-	-	-	**28**	92
17:15	17:30	-	21	-	-	-	-	-	11	-	-	-	-	**32**	104
17:30	17:45	-	14	-	-	-	-	-	14	-	-	-	-	**28**	114
17:45	18:00	-	16	-	-	-	-	-	12	-	-	-	-	**28**	116
TOTAL		-	**597**	-	-	-	-	-	**516**	-	-	-	-	**1 113**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:15	07:15	-	29	-	-	-	-	-	57	-	-	-	-	**86**	**AM PEAK**
06:15	07:15	-	0.91	-	-	-	-	-	0.89	-	-	-	-	**0.90**	**AM PHF**
12:15	13:15	-	60	-	-	-	-	-	50	-	-	-	-	**110**	**MID PEAK**
12:15	13:15	-	0.79	-	-	-	-	-	0.74	-	-	-	-	**0.83**	**MID PHF**
17:00	18:00	-	64	-	-	-	-	-	52	-	-	-	-	**116**	**PM PEAK**
17:00	18:00	-	0.76	-	-	-	-	-	0.87	-	-	-	-	**0.91**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	108	-	-	-	-	-	123	-	-	-	-	**231**	**AM TOTAL**
09:00	15:00	-	312	-	-	-	-	-	257	-	-	-	-	**569**	**MID TOTAL**
15:00	18:00	-	177	-	-	-	-	-	136	-	-	-	-	**313**	**PM TOTAL**

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Western Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

OVERVIEW MAP & VIDEO FRAME

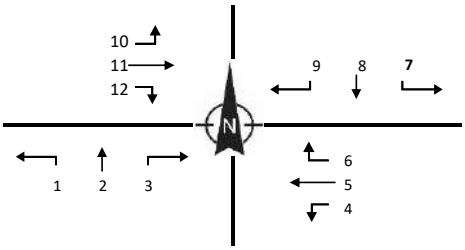
JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND
RANDFONTEIN RD (R28)

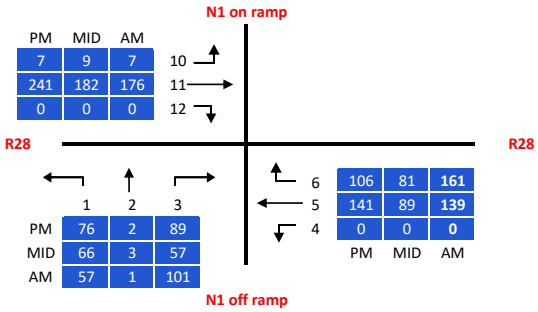
NORTHERN APPROACH / SOUTHBOUND
N1 ON-RAMP

SOUTHERN APPROACH / NORTHBOUND
N1 OFF-RAMP

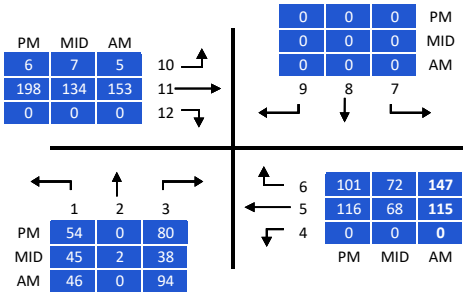
EASTERN APPROACH / WESTBOUND
RANDFONTEIN RD (R28)



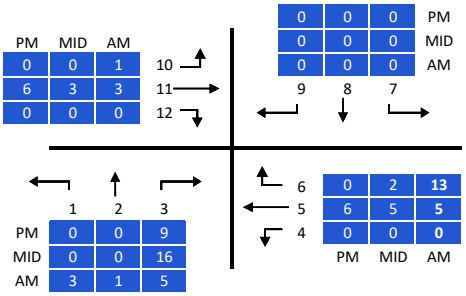
TOTAL VEHICLES SUMMARY



LIGHT VEHICLES



MINI BUS TAXI



BUSSES

HEAVY VEHICLES

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Western Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	21	-	5	-	30	30	-	-	-	-	22	-	**108**	
06:15	06:30	26	-	6	-	30	41	-	-	-	3	32	-	**138**	
06:30	06:45	19	-	5	-	24	34	-	-	-	2	32	-	**116**	
06:45	07:00	14	-	18	-	39	44	-	-	-	3	51	-	**169**	531
07:00	07:15	15	-	31	-	37	32	-	-	-	1	41	-	**157**	580
07:15	07:30	15	1	35	-	31	61	-	-	-	3	40	-	**186**	628
07:30	07:45	13	-	17	-	32	24	-	-	-	-	44	-	**130**	642
07:45	08:00	13	-	17	-	34	36	-	-	-	6	47	-	**153**	626
08:00	08:15	18	-	19	-	26	23	-	-	-	2	42	-	**130**	599
08:15	08:30	24	1	9	-	15	25	-	-	-	2	47	-	**123**	536
08:30	08:45	16	1	13	-	26	22	-	-	-	3	34	-	**115**	521
08:45	09:00	16	-	6	-	17	16	-	-	-	-	32	-	**87**	455
09:00	09:15	14	-	6	-	15	15	-	-	-	5	37	-	**92**	
09:15	09:30	15	-	10	-	22	22	-	-	-	2	29	-	**100**	
09:30	09:45	11	-	10	-	21	17	-	-	-	1	45	-	**105**	
09:45	10:00	14	-	7	-	21	11	-	-	-	4	36	-	**93**	390
10:00	10:15	13	-	11	-	21	26	-	-	-	-	29	-	**100**	398
10:15	10:30	17	-	6	-	22	20	-	-	-	-	31	-	**96**	394
10:30	10:45	16	-	6	-	22	14	-	-	-	-	41	-	**99**	388
10:45	11:00	8	-	5	-	16	16	-	-	-	1	36	-	**82**	377
11:00	11:15	16	1	8	-	19	15	-	-	-	1	38	-	**98**	375
11:15	11:30	16	-	8	-	15	16	-	-	-	1	34	-	**90**	369
11:30	11:45	14	1	4	-	17	22	-	-	-	1	37	-	**96**	366
11:45	12:00	14	-	8	-	21	14	-	-	-	1	38	-	**96**	380
12:00	12:15	13	-	10	-	20	12	-	-	-	1	26	-	**82**	364
12:15	12:30	22	-	11	-	28	15	-	-	-	1	50	-	**127**	401
12:30	12:45	14	1	7	-	28	19	-	-	-	-	38	-	**107**	412
12:45	13:00	12	-	12	-	26	17	-	-	-	2	25	-	**94**	410
13:00	13:15	18	1	7	-	28	20	-	-	-	2	39	-	**115**	443
13:15	13:30	15	-	8	-	19	21	-	-	-	2	45	-	**110**	426
13:30	13:45	15	-	12	-	21	20	-	-	-	2	37	-	**107**	426
13:45	14:00	13	-	7	-	27	22	-	-	-	1	43	-	**113**	445
14:00	14:15	21	1	16	-	15	25	-	-	-	1	41	-	**120**	450
14:15	14:30	13	1	16	-	21	17	-	-	-	1	39	-	**108**	448
14:30	14:45	18	1	15	-	25	20	-	-	-	7	51	-	**137**	478
14:45	15:00	14	-	10	-	28	19	-	-	-	-	51	-	**122**	487
15:00	15:15	18	-	15	-	32	21	-	-	-	4	54	-	**144**	
15:15	15:30	23	-	9	1	30	24	-	-	-	1	62	-	**150**	
15:30	15:45	21	1	15	-	27	23	-	-	-	2	63	-	**152**	
15:45	16:00	16	-	9	-	26	27	-	-	-	1	55	-	**134**	580
16:00	16:15	17	1	11	-	24	28	-	-	-	-	38	-	**119**	555
16:15	16:30	14	-	12	-	34	32	-	-	-	3	62	-	**157**	562
16:30	16:45	21	-	21	-	34	30	-	-	-	2	63	-	**171**	581
16:45	17:00	23	1	35	-	35	22	-	-	-	2	68	-	**186**	633
17:00	17:15	18	1	21	-	38	22	-	-	-	-	48	-	**148**	662
17:15	17:30	23	-	16	-	32	23	-	-	-	1	40	-	**135**	640
17:30	17:45	21	-	20	-	32	14	-	-	-	1	46	-	**134**	603
17:45	18:00	16	1	26	-	18	28	-	-	-	2	39	-	**130**	547
TOTAL		**797**	**15**	**611**	**1**	**1 221**	**1 117**	**-**	**-**	**-**	**81**	**2 018**	**-**	**5 861**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	57	1	101	-	139	161	-	-	-	7	176	-	**642**	**AM PEAK**
06:45	07:45	0.95	0.25	0.72	-	0.89	0.66	-	-	-	0.58	0.86	-	**0.86**	**AM PHF**
14:00	15:00	66	3	57	-	89	81	-	-	-	9	182	-	**487**	**MID PEAK**
14:00	15:00	0.79	0.75	0.89	-	0.79	0.81	-	-	-	0.32	0.89	-	**0.89**	**MID PHF**
16:15	17:15	76	2	89	-	141	106	-	-	-	7	241	-	**662**	**PM PEAK**
16:15	17:15	0.83	0.50	0.64	-	0.93	0.83	-	-	-	0.58	0.89	-	**0.89**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	210	3	181	-	341	388	-	-	-	25	464	-	**1 612**	**AM TOTAL**
09:00	15:00	356	7	220	-	518	435	-	-	-	37	916	-	**2 489**	**MID TOTAL**
15:00	18:00	231	5	210	1	362	294	-	-	-	19	638	-	**1 760**	**PM TOTAL**

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Western Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	16	-	2	-	27	28	-	-	-	-	20	-	**93**	
06:15	06:30	21	-	6	-	24	35	-	-	-	2	23	-	**111**	
06:30	06:45	17	-	2	-	17	31	-	-	-	-	24	-	**91**	
06:45	07:00	11	-	17	-	33	41	-	-	-	2	45	-	**149**	444
07:00	07:15	12	-	27	-	30	29	-	-	-	-	34	-	**132**	483
07:15	07:30	14	-	34	-	26	54	-	-	-	3	35	-	**166**	538
07:30	07:45	9	-	16	-	26	23	-	-	-	-	39	-	**113**	560
07:45	08:00	10	-	15	-	30	31	-	-	-	5	40	-	**131**	542
08:00	08:15	17	-	15	-	19	20	-	-	-	1	34	-	**106**	516
08:15	08:30	21	1	8	-	10	21	-	-	-	1	34	-	**96**	446
08:30	08:45	12	1	7	-	21	17	-	-	-	3	24	-	**85**	418
08:45	09:00	9	-	4	-	12	14	-	-	-	-	26	-	**65**	352
09:00	09:15	11	-	5	-	12	14	-	-	-	4	27	-	**73**	
09:15	09:30	8	-	6	-	14	18	-	-	-	1	24	-	**71**	
09:30	09:45	7	-	9	-	16	15	-	-	-	1	39	-	**87**	
09:45	10:00	10	-	6	-	17	9	-	-	-	4	21	-	**67**	298
10:00	10:15	6	-	9	-	13	25	-	-	-	-	22	-	**75**	300
10:15	10:30	13	-	6	-	9	17	-	-	-	-	21	-	**66**	295
10:30	10:45	10	-	4	-	16	14	-	-	-	-	30	-	**74**	282
10:45	11:00	6	-	3	-	12	13	-	-	-	-	22	-	**56**	271
11:00	11:15	12	-	5	-	16	12	-	-	-	1	25	-	**71**	267
11:15	11:30	13	-	7	-	10	11	-	-	-	1	23	-	**65**	266
11:30	11:45	8	-	4	-	13	18	-	-	-	1	29	-	**73**	265
11:45	12:00	7	-	8	-	17	13	-	-	-	1	31	-	**77**	286
12:00	12:15	12	-	8	-	18	10	-	-	-	1	17	-	**66**	281
12:15	12:30	14	-	8	-	23	15	-	-	-	1	36	-	**97**	313
12:30	12:45	9	1	6	-	23	15	-	-	-	-	23	-	**77**	317
12:45	13:00	5	-	12	-	23	14	-	-	-	2	20	-	**76**	316
13:00	13:15	15	-	6	-	23	18	-	-	-	1	28	-	**91**	341
13:15	13:30	7	-	6	-	14	14	-	-	-	2	31	-	**74**	318
13:30	13:45	11	-	10	-	10	17	-	-	-	1	24	-	**73**	314
13:45	14:00	9	-	5	-	24	21	-	-	-	-	27	-	**86**	324
14:00	14:15	15	1	10	-	10	24	-	-	-	1	32	-	**93**	326
14:15	14:30	9	-	13	-	16	16	-	-	-	1	32	-	**87**	339
14:30	14:45	14	1	7	-	19	18	-	-	-	5	35	-	**99**	365
14:45	15:00	7	-	8	-	23	14	-	-	-	-	35	-	**87**	366
15:00	15:15	6	-	13	-	22	19	-	-	-	4	45	-	**109**	
15:15	15:30	13	-	8	1	27	24	-	-	-	1	46	-	**120**	
15:30	15:45	14	1	14	-	21	21	-	-	-	2	47	-	**120**	
15:45	16:00	14	-	9	-	20	24	-	-	-	1	41	-	**109**	458
16:00	16:15	13	1	10	-	20	27	-	-	-	-	35	-	**106**	455
16:15	16:30	12	-	11	-	26	31	-	-	-	3	50	-	**133**	468
16:30	16:45	18	-	21	-	27	27	-	-	-	2	49	-	**144**	492
16:45	17:00	13	-	32	-	29	21	-	-	-	1	57	-	**153**	536
17:00	17:15	11	-	16	-	34	22	-	-	-	-	42	-	**125**	555
17:15	17:30	17	-	14	-	26	23	-	-	-	1	35	-	**116**	538
17:30	17:45	15	-	17	-	24	13	-	-	-	1	44	-	**114**	508
17:45	18:00	10	1	23	-	12	26	-	-	-	2	31	-	**105**	460
TOTAL		**563**	**8**	**512**	**1**	**954**	**997**	**-**	**-**	**-**	**64**	**1 554**	**-**	**4 653**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	46	-	94	-	115	147	-	-	-	5	153	-	**560**	**AM PEAK**
06:45	07:45	0.82	-	0.69	-	0.87	0.68	-	-	-	0.42	0.85	-	**0.84**	**AM PHF**
14:00	15:00	45	2	38	-	68	72	-	-	-	7	134	-	**366**	**MID PEAK**
14:00	15:00	0.75	0.50	0.73	-	0.74	0.75	-	-	-	0.35	0.96	-	**0.92**	**MID PHF**
16:15	17:15	54	-	80	-	116	101	-	-	-	6	198	-	**555**	**PM PEAK**
16:15	17:15	0.75	-	0.62	-	0.85	0.81	-	-	-	0.50	0.87	-	**0.91**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	169	2	153	-	275	344	-	-	-	17	378	-	**1 338**	**AM TOTAL**
09:00	15:00	238	3	171	-	391	375	-	-	-	29	654	-	**1 861**	**MID TOTAL**
15:00	18:00	156	3	188	1	288	278	-	-	-	18	522	-	**1 454**	**PM TOTAL**

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Western Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	1	-	-	2	-	-	-	-	-	-	3	
06:15	06:30	-	-	-	-	2	5	-	-	-	1	2	-	10	
06:30	06:45	-	-	-	-	-	3	-	-	-	2	-	-	5	
06:45	07:00	-	-	1	-	-	2	-	-	-	-	-	-	3	21
07:00	07:15	1	-	3	-	-	3	-	-	-	1	1	-	9	27
07:15	07:30	-	1	-	-	1	6	-	-	-	-	1	-	9	26
07:30	07:45	2	-	1	-	3	-	-	-	-	-	-	-	6	27
07:45	08:00	-	-	1	-	1	4	-	-	-	-	1	-	7	31
08:00	08:15	-	-	1	-	1	2	-	-	-	-	2	-	6	28
08:15	08:30	-	-	-	-	-	3	-	-	-	1	-	-	4	23
08:30	08:45	-	-	2	-	-	2	-	-	-	-	-	-	4	21
08:45	09:00	-	-	-	-	-	2	-	-	-	-	1	-	3	17
09:00	09:15	-	-	-	-	-	-	-	-	-	-	1	-	1	
09:15	09:30	-	-	1	-	-	3	-	-	-	1	1	-	6	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	1	-	1	
09:45	10:00	-	-	-	-	1	2	-	-	-	-	1	-	4	12
10:00	10:15	-	-	-	-	2	1	-	-	-	-	-	-	3	14
10:15	10:30	-	-	-	-	1	1	-	-	-	-	1	-	3	11
10:30	10:45	-	-	-	-	1	-	-	-	-	-	1	-	2	12
10:45	11:00	-	-	-	-	-	2	-	-	-	-	1	-	3	11
11:00	11:15	-	1	-	-	-	1	-	-	-	-	1	-	3	11
11:15	11:30	-	-	-	-	1	3	-	-	-	-	-	-	4	12
11:30	11:45	-	-	-	-	-	1	-	-	-	-	1	-	2	12
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	9
12:00	12:15	-	-	1	-	2	-	-	-	-	-	1	-	4	10
12:15	12:30	-	-	-	-	1	-	-	-	-	-	1	-	2	8
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	6
12:45	13:00	1	-	-	-	-	-	-	-	-	-	1	-	2	8
13:00	13:15	-	-	1	-	1	-	-	-	-	-	-	-	2	6
13:15	13:30	-	-	-	-	2	2	-	-	-	-	2	-	6	10
13:30	13:45	-	-	-	-	2	1	-	-	-	-	-	-	3	13
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	11
14:00	14:15	-	-	4	-	-	-	-	-	-	-	1	-	5	14
14:15	14:30	-	-	3	-	1	1	-	-	-	-	-	-	5	13
14:30	14:45	-	-	8	-	2	1	-	-	-	-	2	-	13	23
14:45	15:00	-	-	1	-	2	-	-	-	-	-	-	-	3	26
15:00	15:15	1	-	-	-	1	1	-	-	-	-	1	-	4	
15:15	15:30	-	-	1	-	1	-	-	-	-	-	3	-	5	
15:30	15:45	-	-	1	-	-	1	-	-	-	-	2	-	4	
15:45	16:00	-	-	-	-	-	2	-	-	-	-	1	-	3	16
16:00	16:15	-	-	-	-	1	1	-	-	-	-	-	-	2	14
16:15	16:30	-	-	1	-	2	-	-	-	-	-	1	-	4	13
16:30	16:45	-	-	-	-	-	2	-	-	-	-	2	-	4	13
16:45	17:00	-	-	2	-	3	-	-	-	-	-	1	-	6	16
17:00	17:15	-	-	2	-	-	-	-	-	-	-	-	-	2	16
17:15	17:30	-	-	2	-	3	-	-	-	-	-	3	-	8	20
17:30	17:45	-	-	3	-	-	-	-	-	-	-	2	-	5	21
17:45	18:00	-	-	2	-	1	1	-	-	-	-	1	-	5	20
TOTAL		5	2	43	-	39	61	-	-	-	6	42	-	198	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
07:00	08:00	3	1	5	-	5	13	-	-	-	1	3	-	31	AM PEAK
07:00	08:00	0.38	0.25	0.42	-	0.42	0.54	-	-	-	0.25	0.75	-	0.86	AM PHF
14:00	15:00	-	-	16	-	5	2	-	-	-	-	3	-	26	MID PEAK
14:00	15:00	-	-	0.50	-	0.62	0.50	-	-	-	-	0.38	-	0.50	MID PHF
16:45	17:45	-	-	9	-	6	-	-	-	-	-	6	-	21	PM PEAK
16:45	17:45	-	-	0.75	-	0.50	-	-	-	-	-	0.50	-	0.66	PM PHF

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	3	1	10	-	8	34	-	-	-	5	8	-	69	AM TOTAL
09:00	15:00	1	1	19	-	19	19	-	-	-	1	17	-	77	MID TOTAL
15:00	18:00	1	-	14	-	12	8	-	-	-	-	17	-	52	PM TOTAL

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Western Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	2	-	1	-	-	-	-	-	-	-	**3**	
06:15	06:30	-	-	-	-	1	-	-	-	-	-	-	-	**1**	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	4
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
09:30	09:45	1	-	-	-	-	-	-	-	-	-	-	-	**1**	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
10:30	10:45	-	-	-	-	-	-	-	-	-	-	1	-	**1**	1
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
11:00	11:15	-	-	-	-	-	1	-	-	-	-	-	-	**1**	2
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	2
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	4	-	**4**	4
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	4
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	4
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	4
14:30	14:45	-	-	-	-	-	-	-	-	-	-	1	-	**1**	1
14:45	15:00	-	-	-	-	-	-	-	-	-	-	6	-	**6**	7
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
TOTAL		**1**	**-**	**2**	**-**	**2**	**1**	**-**	**-**	**-**	**-**	**12**	**-**	**18**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	07:00	-	-	2	-	2	-	-	-	-	-	-	-	**4**	**AM PEAK**
06:00	07:00	-	-	0.25	-	0.50	-	-	-	-	-	-	-	**0.33**	**AM PHF**
14:00	15:00	-	-	-	-	-	-	-	-	-	-	7	-	**7**	**MID PEAK**
14:00	15:00	-	-	-	-	-	-	-	-	-	-	0.29	-	**0.29**	**MID PHF**
15:00	16:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**PM PEAK**
15:00	16:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	2	-	2	-	-	-	-	-	-	-	**4**	**AM TOTAL**
09:00	15:00	1	-	-	-	-	1	-	-	-	-	12	-	**14**	**MID TOTAL**
15:00	18:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**PM TOTAL**

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Western Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	5	-	-	-	2	-	-	-	-	-	2	-	**9**	
06:15	06:30	5	-	-	-	3	1	-	-	-	-	7	-	**16**	
06:30	06:45	2	-	3	-	7	-	-	-	-	-	8	-	**20**	
06:45	07:00	3	-	-	-	6	1	-	-	-	1	6	-	**17**	62
07:00	07:15	2	-	1	-	7	-	-	-	-	-	6	-	**16**	69
07:15	07:30	1	-	1	-	4	1	-	-	-	-	4	-	**11**	64
07:30	07:45	2	-	-	-	3	1	-	-	-	-	5	-	**11**	55
07:45	08:00	3	-	1	-	3	1	-	-	-	1	6	-	**15**	53
08:00	08:15	1	-	3	-	6	1	-	-	-	1	6	-	**18**	55
08:15	08:30	3	-	1	-	5	1	-	-	-	-	13	-	**23**	67
08:30	08:45	4	-	4	-	5	3	-	-	-	-	10	-	**26**	82
08:45	09:00	7	-	2	-	5	-	-	-	-	-	5	-	**19**	86
09:00	09:15	3	-	1	-	3	1	-	-	-	1	9	-	**18**	
09:15	09:30	7	-	3	-	8	1	-	-	-	-	4	-	**23**	
09:30	09:45	3	-	1	-	5	2	-	-	-	-	5	-	**16**	
09:45	10:00	4	-	1	-	3	-	-	-	-	-	14	-	**22**	79
10:00	10:15	7	-	2	-	6	-	-	-	-	-	7	-	**22**	83
10:15	10:30	4	-	-	-	12	2	-	-	-	-	9	-	**27**	87
10:30	10:45	6	-	2	-	5	-	-	-	-	-	9	-	**22**	93
10:45	11:00	2	-	2	-	4	1	-	-	-	1	13	-	**23**	94
11:00	11:15	4	-	3	-	3	1	-	-	-	-	12	-	**23**	95
11:15	11:30	3	-	1	-	4	2	-	-	-	-	11	-	**21**	89
11:30	11:45	6	1	-	-	4	3	-	-	-	-	7	-	**21**	88
11:45	12:00	7	-	-	-	4	1	-	-	-	-	7	-	**19**	84
12:00	12:15	1	-	1	-	-	2	-	-	-	-	8	-	**12**	73
12:15	12:30	8	-	3	-	4	-	-	-	-	-	13	-	**28**	80
12:30	12:45	5	-	1	-	5	4	-	-	-	-	15	-	**30**	89
12:45	13:00	6	-	-	-	3	3	-	-	-	-	4	-	**16**	86
13:00	13:15	3	1	-	-	4	2	-	-	-	1	11	-	**22**	96
13:15	13:30	8	-	2	-	3	5	-	-	-	-	12	-	**30**	98
13:30	13:45	4	-	2	-	9	2	-	-	-	1	9	-	**27**	95
13:45	14:00	4	-	2	-	3	1	-	-	-	1	16	-	**27**	106
14:00	14:15	6	-	2	-	5	1	-	-	-	-	8	-	**22**	106
14:15	14:30	4	1	-	-	4	-	-	-	-	-	7	-	**16**	92
14:30	14:45	4	-	-	-	4	1	-	-	-	2	13	-	**24**	89
14:45	15:00	7	-	1	-	3	5	-	-	-	-	10	-	**26**	88
15:00	15:15	11	-	2	-	9	1	-	-	-	-	8	-	**31**	
15:15	15:30	10	-	-	-	2	-	-	-	-	-	13	-	**25**	
15:30	15:45	7	-	-	-	6	1	-	-	-	-	14	-	**28**	
15:45	16:00	2	-	-	-	6	1	-	-	-	-	13	-	**22**	106
16:00	16:15	4	-	1	-	3	-	-	-	-	-	3	-	**11**	86
16:15	16:30	2	-	-	-	6	1	-	-	-	-	11	-	**20**	81
16:30	16:45	3	-	-	-	7	1	-	-	-	-	12	-	**23**	76
16:45	17:00	10	1	1	-	3	1	-	-	-	1	10	-	**27**	81
17:00	17:15	7	1	3	-	4	-	-	-	-	-	6	-	**21**	91
17:15	17:30	6	-	-	-	3	-	-	-	-	-	2	-	**11**	82
17:30	17:45	6	-	-	-	8	1	-	-	-	-	-	-	**15**	74
17:45	18:00	6	-	1	-	5	1	-	-	-	-	7	-	**20**	67
TOTAL		**228**	**5**	**54**	**-**	**226**	**58**	**-**	**-**	**-**	**11**	**410**	**-**	**992**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
08:00	09:00	15	-	10	-	21	5	-	-	-	1	34	-	**86**	**AM PEAK**
08:00	09:00	0.54	-	0.62	-	0.88	0.42	-	-	-	0.25	0.65	-	**0.83**	**AM PHF**
13:00	14:00	19	1	6	-	19	10	-	-	-	3	48	-	**106**	**MID PEAK**
13:00	14:00	0.59	0.25	0.75	-	0.53	0.50	-	-	-	0.75	0.75	-	**0.88**	**MID PHF**
15:00	16:00	30	-	2	-	23	3	-	-	-	-	48	-	**106**	**PM PEAK**
15:00	16:00	0.68	-	0.25	-	0.64	0.75	-	-	-	-	0.86	-	**0.85**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	38	-	16	-	56	10	-	-	-	3	78	-	**201**	**AM TOTAL**
09:00	15:00	116	3	30	-	108	40	-	-	-	7	233	-	**537**	**MID TOTAL**
15:00	18:00	74	2	8	-	62	8	-	-	-	1	99	-	**254**	**PM TOTAL**

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT					
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Eastern Ramp Terminal)					
SURVEY DATE:	Tuesday, 19 November 2024							
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C	

OVERVIEW MAP & VIDEO FRAME

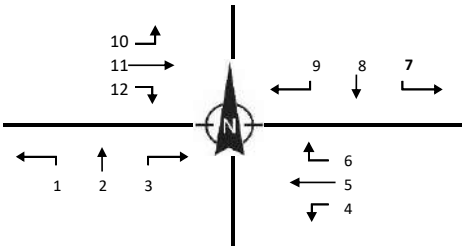
JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND
RANDFONTEIN RD (R28)

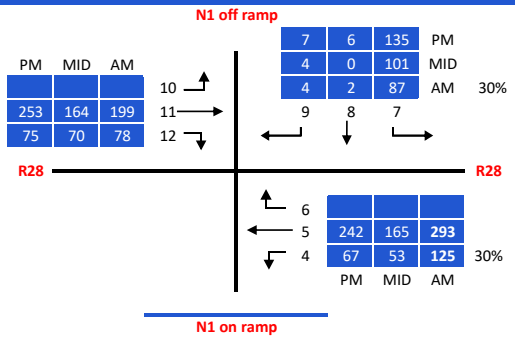
NORTHERN APPROACH / SOUTHBOUND
N1 OFF-RAMP

SOUTHERN APPROACH / NORTHBOUND
N1 ON-RAMP

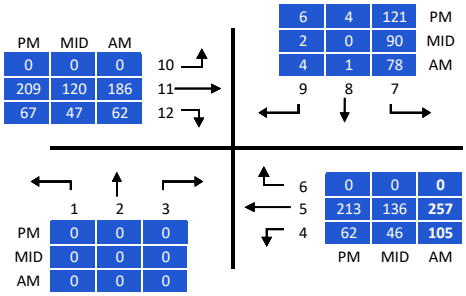
EASTERN APPROACH / WESTBOUND
RANDFONTEIN RD (R28)



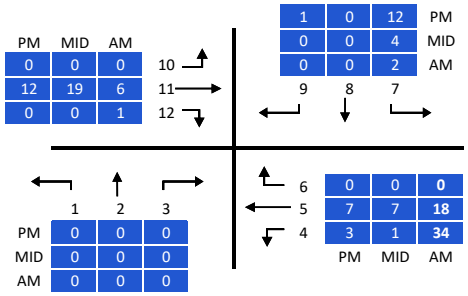
TOTAL VEHICLES SUMMARY



LIGHT VEHICLES



MINI BUS TAXI



BUSSES

HEAVY VEHICLES

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Eastern Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	12	63	-	7	-	-	-	16	9	**107**	
06:15	06:30	-	-	-	18	66	-	7	-	2	-	23	17	**133**	
06:30	06:45	-	-	-	32	64	-	13	1	-	-	24	11	**145**	
06:45	07:00	-	-	-	33	77	-	19	-	-	-	41	27	**197**	582
07:00	07:15	-	-	-	32	76	-	8	-	1	-	57	14	**188**	663
07:15	07:30	-	-	-	35	85	-	36	2	1	-	57	20	**236**	766
07:30	07:45	-	-	-	25	55	-	24	-	2	-	44	17	**167**	788
07:45	08:00	-	-	-	25	64	-	31	-	6	-	46	15	**187**	778
08:00	08:15	-	-	-	7	45	-	25	-	3	-	46	14	**140**	730
08:15	08:30	-	-	-	5	40	-	33	-	-	-	29	29	**136**	630
08:30	08:45	-	-	-	13	47	-	16	-	1	-	24	23	**124**	587
08:45	09:00	-	-	-	6	33	-	22	-	-	-	19	19	**99**	499
09:00	09:15	-	-	-	13	31	-	18	-	-	-	29	14	**105**	
09:15	09:30	-	-	-	8	43	-	23	-	2	-	30	8	**114**	
09:30	09:45	-	-	-	9	36	-	11	-	-	-	41	13	**110**	
09:45	10:00	-	-	-	7	34	-	23	-	1	-	25	16	**106**	435
10:00	10:15	-	-	-	7	45	-	25	-	2	-	31	11	**121**	451
10:15	10:30	-	-	-	10	38	-	17	2	2	-	28	7	**104**	441
10:30	10:45	-	-	-	12	36	-	23	-	2	-	27	17	**117**	448
10:45	11:00	-	-	-	9	26	-	24	-	2	-	29	13	**103**	445
11:00	11:15	-	-	-	8	33	-	19	-	1	-	27	17	**105**	429
11:15	11:30	-	-	-	15	38	-	12	-	-	-	29	12	**106**	431
11:30	11:45	-	-	-	14	33	-	25	2	1	-	26	16	**117**	431
11:45	12:00	-	-	-	10	33	-	20	1	-	-	36	9	**109**	437
12:00	12:15	-	-	-	8	36	-	22	-	-	-	24	12	**102**	434
12:15	12:30	-	-	-	11	39	-	19	-	2	-	41	20	**132**	460
12:30	12:45	-	-	-	14	43	-	20	-	2	-	27	18	**124**	467
12:45	13:00	-	-	-	12	38	-	17	-	6	-	29	7	**109**	467
13:00	13:15	-	-	-	9	47	-	14	-	-	-	28	18	**116**	481
13:15	13:30	-	-	-	16	39	-	16	-	-	-	35	19	**125**	474
13:30	13:45	-	-	-	12	41	-	21	1	1	-	29	18	**123**	473
13:45	14:00	-	-	-	6	48	-	12	-	2	-	36	18	**122**	486
14:00	14:15	-	-	-	11	42	-	21	-	1	-	37	16	**128**	498
14:15	14:30	-	-	-	13	35	-	26	-	-	-	43	12	**129**	502
14:30	14:45	-	-	-	15	42	-	29	-	2	-	48	16	**152**	531
14:45	15:00	-	-	-	14	46	-	25	-	1	-	36	26	**148**	557
15:00	15:15	-	-	-	16	49	-	23	-	3	-	52	17	**160**	
15:15	15:30	-	-	-	19	51	-	26	-	4	-	45	24	**169**	
15:30	15:45	-	-	-	12	48	-	27	-	3	-	51	27	**168**	
15:45	16:00	-	-	-	8	51	-	33	-	1	-	43	20	**156**	653
16:00	16:15	-	-	-	14	51	-	41	-	1	-	36	13	**156**	649
16:15	16:30	-	-	-	15	66	-	32	2	1	-	57	16	**189**	669
16:30	16:45	-	-	-	17	64	-	29	2	-	-	63	21	**196**	697
16:45	17:00	-	-	-	15	53	-	38	-	4	-	70	28	**208**	749
17:00	17:15	-	-	-	20	59	-	36	2	2	-	63	10	**192**	785
17:15	17:30	-	-	-	11	51	-	30	-	2	-	42	13	**149**	745
17:30	17:45	-	-	-	8	44	-	28	-	3	-	50	15	**148**	697
17:45	18:00	-	-	-	14	45	-	32	1	1	-	47	15	**155**	644
TOTAL		-	-	-	**675**	**2 269**	-	**1 098**	**16**	**71**	-	**1 816**	**787**	**6 732**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	-	-	-	125	293	-	87	2	4	-	199	78	**788**	**AM PEAK**
06:45	07:45	-	-	-	0.89	0.86	-	0.60	0.25	0.50	-	0.87	0.72	**0.83**	**AM PHF**
14:00	15:00	-	-	-	53	165	-	101	-	4	-	164	70	**557**	**MID PEAK**
14:00	15:00	-	-	-	0.88	0.90	-	0.87	-	0.50	-	0.85	0.67	**0.92**	**MID PHF**
16:15	17:15	-	-	-	67	242	-	135	6	7	-	253	75	**785**	**PM PEAK**
16:15	17:15	-	-	-	0.84	0.92	-	0.57	0.75	0.44	-	0.90	0.67	**0.94**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	243	715	-	241	3	16	-	426	215	**1 859**	**AM TOTAL**
09:00	15:00	-	-	-	263	922	-	482	6	30	-	771	353	**2 827**	**MID TOTAL**
15:00	18:00	-	-	-	169	632	-	375	7	25	-	619	219	**2 046**	**PM TOTAL**

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Eastern Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	9	58	-	5	-	-	-	14	7	**93**	
06:15	06:30	-	-	-	11	54	-	7	-	2	-	20	11	**105**	
06:30	06:45	-	-	-	17	52	-	11	1	-	-	19	6	**106**	
06:45	07:00	-	-	-	24	69	-	16	-	-	-	39	21	**169**	473
07:00	07:15	-	-	-	28	64	-	7	-	1	-	51	10	**161**	541
07:15	07:30	-	-	-	31	76	-	34	1	1	-	55	16	**214**	650
07:30	07:45	-	-	-	22	48	-	21	-	2	-	41	15	**149**	693
07:45	08:00	-	-	-	23	57	-	28	-	5	-	37	14	**164**	688
08:00	08:15	-	-	-	6	37	-	25	-	3	-	37	13	**121**	648
08:15	08:30	-	-	-	5	31	-	30	-	-	-	21	24	**111**	545
08:30	08:45	-	-	-	11	37	-	13	-	1	-	16	17	**95**	491
08:45	09:00	-	-	-	6	27	-	21	-	-	-	16	13	**83**	410
09:00	09:15	-	-	-	10	27	-	18	-	-	-	24	9	**88**	
09:15	09:30	-	-	-	7	31	-	22	-	2	-	24	6	**92**	
09:30	09:45	-	-	-	8	29	-	7	-	-	-	35	13	**92**	
09:45	10:00	-	-	-	7	27	-	23	-	1	-	20	6	**84**	356
10:00	10:15	-	-	-	6	34	-	21	-	2	-	26	7	**96**	364
10:15	10:30	-	-	-	8	26	-	17	2	1	-	21	5	**80**	352
10:30	10:45	-	-	-	11	29	-	22	-	2	-	22	12	**98**	358
10:45	11:00	-	-	-	9	20	-	23	-	2	-	18	8	**80**	354
11:00	11:15	-	-	-	8	25	-	18	-	1	-	18	11	**81**	339
11:15	11:30	-	-	-	13	26	-	10	-	-	-	22	8	**79**	338
11:30	11:45	-	-	-	14	28	-	24	2	1	-	21	11	**101**	341
11:45	12:00	-	-	-	7	28	-	19	1	-	-	32	7	**94**	355
12:00	12:15	-	-	-	7	32	-	18	-	-	-	21	8	**86**	360
12:15	12:30	-	-	-	10	32	-	17	-	2	-	29	13	**103**	384
12:30	12:45	-	-	-	12	32	-	20	-	1	-	18	10	**93**	376
12:45	13:00	-	-	-	11	30	-	17	-	6	-	25	7	**96**	378
13:00	13:15	-	-	-	8	39	-	13	-	-	-	23	10	**93**	385
13:15	13:30	-	-	-	15	27	-	16	-	-	-	28	13	**99**	381
13:30	13:45	-	-	-	10	28	-	18	-	1	-	24	7	**88**	376
13:45	14:00	-	-	-	6	45	-	9	-	1	-	25	10	**96**	376
14:00	14:15	-	-	-	11	35	-	20	-	1	-	30	10	**107**	390
14:15	14:30	-	-	-	10	29	-	22	-	-	-	35	9	**105**	396
14:30	14:45	-	-	-	14	35	-	27	-	1	-	27	13	**117**	425
14:45	15:00	-	-	-	11	37	-	21	-	-	-	28	15	**112**	441
15:00	15:15	-	-	-	16	37	-	22	-	3	-	44	15	**137**	
15:15	15:30	-	-	-	18	48	-	22	-	4	-	37	17	**146**	
15:30	15:45	-	-	-	10	40	-	25	-	3	-	42	20	**140**	
15:45	16:00	-	-	-	8	42	-	32	-	1	-	32	17	**132**	555
16:00	16:15	-	-	-	10	46	-	35	-	1	-	34	11	**137**	555
16:15	16:30	-	-	-	15	56	-	30	1	1	-	45	15	**163**	572
16:30	16:45	-	-	-	15	55	-	26	2	-	-	52	18	**168**	600
16:45	17:00	-	-	-	13	47	-	32	-	3	-	60	24	**179**	647
17:00	17:15	-	-	-	19	55	-	33	1	2	-	52	10	**172**	682
17:15	17:30	-	-	-	8	45	-	28	-	2	-	35	13	**131**	650
17:30	17:45	-	-	-	7	34	-	25	-	3	-	45	15	**129**	611
17:45	18:00	-	-	-	14	38	-	30	1	-	-	41	11	**135**	567
TOTAL		**-**	**-**	**-**	**579**	**1 884**	**-**	**1 000**	**12**	**63**	**-**	**1 481**	**581**	**5 600**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	-	-	-	105	257	-	78	1	4	-	186	62	**693**	**AM PEAK**
06:45	07:45	-	-	-	0.85	0.85	-	0.57	0.25	0.50	-	0.85	0.74	**0.81**	**AM PHF**
14:00	15:00	-	-	-	46	136	-	90	-	2	-	120	47	**441**	**MID PEAK**
14:00	15:00	-	-	-	0.82	0.92	-	0.83	-	0.50	-	0.86	0.78	**0.94**	**MID PHF**
16:15	17:15	-	-	-	62	213	-	121	4	6	-	209	67	**682**	**PM PEAK**
16:15	17:15	-	-	-	0.82	0.95	-	0.55	0.50	0.50	-	0.87	0.70	**0.95**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	193	610	-	218	2	15	-	366	167	**1 571**	**AM TOTAL**
09:00	15:00	-	-	-	233	731	-	442	5	25	-	596	228	**2 260**	**MID TOTAL**
15:00	18:00	-	-	-	153	543	-	340	5	23	-	519	186	**1 769**	**PM TOTAL**

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Eastern Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	3	2	-	-	-	-	-	1	-	**6**	
06:15	06:30	-	-	-	6	7	-	-	-	-	-	1	1	**15**	
06:30	06:45	-	-	-	15	4	-	-	-	-	-	-	-	**19**	
06:45	07:00	-	-	-	9	2	-	1	-	-	-	1	-	**13**	53
07:00	07:15	-	-	-	4	5	-	1	-	-	-	4	-	**14**	61
07:15	07:30	-	-	-	2	4	-	-	-	-	-	-	-	**6**	52
07:30	07:45	-	-	-	2	3	-	1	-	-	-	-	-	**6**	39
07:45	08:00	-	-	-	1	3	-	-	-	1	-	3	-	**8**	34
08:00	08:15	-	-	-	1	1	-	-	-	-	-	1	-	**3**	23
08:15	08:30	-	-	-	-	3	-	1	-	-	-	-	-	**4**	21
08:30	08:45	-	-	-	1	2	-	2	-	-	-	1	-	**6**	21
08:45	09:00	-	-	-	-	2	-	-	-	-	-	-	1	**3**	16
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
09:15	09:30	-	-	-	-	3	-	-	-	-	-	-	1	**4**	
09:30	09:45	-	-	-	-	-	-	2	-	-	-	1	-	**3**	
09:45	10:00	-	-	-	-	3	-	-	-	-	-	-	1	**4**	11
10:00	10:15	-	-	-	-	4	-	1	-	-	-	-	-	**5**	16
10:15	10:30	-	-	-	-	1	-	-	-	-	-	-	-	**1**	13
10:30	10:45	-	-	-	-	2	-	-	-	-	-	-	-	**2**	12
10:45	11:00	-	-	-	-	1	-	-	-	-	-	1	-	**2**	10
11:00	11:15	-	-	-	-	1	-	1	-	-	-	1	-	**3**	8
11:15	11:30	-	-	-	-	3	-	-	-	-	-	-	-	**3**	10
11:30	11:45	-	-	-	-	1	-	-	-	-	-	1	-	**2**	10
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	8
12:00	12:15	-	-	-	-	2	-	1	-	-	-	1	-	**4**	9
12:15	12:30	-	-	-	-	1	-	1	-	-	-	1	-	**3**	9
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	7
12:45	13:00	-	-	-	-	-	-	-	-	-	-	1	-	**1**	8
13:00	13:15	-	-	-	-	1	-	1	-	-	-	1	-	**3**	7
13:15	13:30	-	-	-	-	4	-	-	-	-	-	1	-	**5**	9
13:30	13:45	-	-	-	1	2	-	2	1	-	-	-	-	**6**	15
13:45	14:00	-	-	-	-	-	-	1	-	-	-	-	-	**1**	15
14:00	14:15	-	-	-	-	-	-	1	-	-	-	4	-	**5**	17
14:15	14:30	-	-	-	1	2	-	2	-	-	-	4	-	**9**	21
14:30	14:45	-	-	-	-	3	-	1	-	-	-	10	-	**14**	29
14:45	15:00	-	-	-	-	2	-	-	-	-	-	1	-	**3**	31
15:00	15:15	-	-	-	-	2	-	-	-	-	-	1	-	**3**	
15:15	15:30	-	-	-	-	1	-	1	-	-	-	4	-	**6**	
15:30	15:45	-	-	-	-	1	-	-	-	-	-	2	1	**4**	
15:45	16:00	-	-	-	-	2	-	1	-	-	-	-	1	**4**	17
16:00	16:15	-	-	-	-	2	-	3	-	-	-	-	-	**5**	19
16:15	16:30	-	-	-	-	2	-	1	-	-	-	2	-	**5**	18
16:30	16:45	-	-	-	1	2	-	3	-	-	-	2	-	**8**	22
16:45	17:00	-	-	-	1	2	-	4	-	1	-	3	-	**11**	29
17:00	17:15	-	-	-	-	-	-	3	-	-	-	2	-	**5**	29
17:15	17:30	-	-	-	1	3	-	2	-	-	-	5	-	**11**	35
17:30	17:45	-	-	-	1	-	-	2	-	-	-	5	-	**8**	35
17:45	18:00	-	-	-	-	2	-	1	-	1	-	3	-	**7**	31
TOTAL		**-**	**-**	**-**	**50**	**93**	**-**	**41**	**1**	**3**	**-**	**69**	**6**	**263**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:15	07:15	-	-	-	34	18	-	2	-	-	-	6	1	**61**	**AM PEAK**
06:15	07:15	-	-	-	0.57	0.64	-	0.50	-	-	-	0.38	0.25	**0.80**	**AM PHF**
14:00	15:00	-	-	-	1	7	-	4	-	-	-	19	-	**31**	**MID PEAK**
14:00	15:00	-	-	-	0.25	0.58	-	0.50	-	-	-	0.48	-	**0.55**	**MID PHF**
16:30	17:30	-	-	-	3	7	-	12	-	1	-	12	-	**35**	**PM PEAK**
16:30	17:30	-	-	-	0.75	0.58	-	0.75	-	0.25	-	0.60	-	**0.80**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	44	38	-	6	-	1	-	12	2	**103**	**AM TOTAL**
09:00	15:00	-	-	-	2	36	-	14	1	-	-	28	2	**83**	**MID TOTAL**
15:00	18:00	-	-	-	4	19	-	21	-	2	-	29	2	**77**	**PM TOTAL**

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Eastern Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

unitraf

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	1	-	-	-	-	-	1	-	**2**	
06:15	06:30	-	-	-	-	1	-	-	-	-	-	-	-	**1**	
06:30	06:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	3
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
07:15	07:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	1	**1**	1
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
11:00	11:15	-	-	-	-	1	-	-	-	-	-	-	-	**1**	2
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	2
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	4	**4**	4
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	4
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	4
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	4
14:30	14:45	-	-	-	-	-	-	-	-	-	-	1	-	**1**	1
14:45	15:00	-	-	-	-	-	-	-	-	-	-	1	5	**6**	7
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
15:45	16:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
17:15	17:30	-	-	-	2	-	-	-	-	-	-	-	-	**2**	2
17:30	17:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	2
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	2
TOTAL		**-**	**-**	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**10**	**18**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	07:00	-	-	-	-	2	-	-	-	-	-	1	-	**3**	**AM PEAK**
06:00	07:00	-	-	-	-	0.50	-	-	-	-	-	0.25	-	**0.38**	**AM PHF**
14:00	15:00	-	-	-	-	-	-	-	-	-	-	2	5	**7**	**MID PEAK**
14:00	15:00	-	-	-	-	-	-	-	-	-	-	0.50	0.25	**0.29**	**MID PHF**
16:30	17:30	-	-	-	2	-	-	-	-	-	-	-	-	**2**	**PM PEAK**
16:30	17:30	-	-	-	0.25	-	-	-	-	-	-	-	-	**0.25**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	2	-	-	-	-	-	1	-	**3**	**AM TOTAL**
09:00	15:00	-	-	-	-	1	-	-	-	-	-	2	10	**13**	**MID TOTAL**
15:00	18:00	-	-	-	2	-	-	-	-	-	-	-	-	**2**	**PM TOTAL**

LOCATION:	EVATON	PROJECT TITLE:	EVATON-TRAFFIC COUNT				
PROJECT NR:	UT2024-3295	INTERSECTION:	RANDFONTEIN RD (R28) & N1 ON/OFF-RAMP (Eastern Ramp Terminal)				
SURVEY DATE:	Tuesday, 19 November 2024						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P2	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	2	-	2	-	-	-	-	2	**6**	
06:15	06:30	-	-	-	1	4	-	-	-	-	-	2	5	**12**	
06:30	06:45	-	-	-	-	8	-	2	-	-	-	5	5	**20**	
06:45	07:00	-	-	-	-	6	-	2	-	-	-	1	6	**15**	53
07:00	07:15	-	-	-	-	7	-	-	-	-	-	2	4	**13**	60
07:15	07:30	-	-	-	2	5	-	2	1	-	-	2	4	**16**	64
07:30	07:45	-	-	-	1	4	-	2	-	-	-	3	2	**12**	56
07:45	08:00	-	-	-	1	4	-	3	-	-	-	6	1	**15**	56
08:00	08:15	-	-	-	-	7	-	-	-	-	-	8	1	**16**	59
08:15	08:30	-	-	-	-	6	-	2	-	-	-	8	5	**21**	64
08:30	08:45	-	-	-	1	8	-	1	-	-	-	7	6	**23**	75
08:45	09:00	-	-	-	-	4	-	1	-	-	-	3	5	**13**	73
09:00	09:15	-	-	-	3	4	-	-	-	-	-	5	5	**17**	
09:15	09:30	-	-	-	1	9	-	1	-	-	-	6	1	**18**	
09:30	09:45	-	-	-	1	7	-	2	-	-	-	5	-	**15**	
09:45	10:00	-	-	-	-	4	-	-	-	-	-	5	9	**18**	68
10:00	10:15	-	-	-	1	7	-	3	-	-	-	5	4	**20**	71
10:15	10:30	-	-	-	2	11	-	-	-	1	-	7	2	**23**	76
10:30	10:45	-	-	-	1	5	-	1	-	-	-	5	4	**16**	77
10:45	11:00	-	-	-	-	5	-	1	-	-	-	10	5	**21**	80
11:00	11:15	-	-	-	-	6	-	-	-	-	-	8	6	**20**	80
11:15	11:30	-	-	-	2	9	-	2	-	-	-	7	4	**24**	81
11:30	11:45	-	-	-	-	4	-	1	-	-	-	4	5	**14**	79
11:45	12:00	-	-	-	3	5	-	1	-	-	-	4	2	**15**	73
12:00	12:15	-	-	-	1	2	-	3	-	-	-	2	4	**12**	65
12:15	12:30	-	-	-	1	6	-	1	-	-	-	11	7	**26**	67
12:30	12:45	-	-	-	2	11	-	-	-	1	-	9	8	**31**	84
12:45	13:00	-	-	-	1	8	-	-	-	-	-	3	-	**12**	81
13:00	13:15	-	-	-	1	7	-	-	-	-	-	4	8	**20**	89
13:15	13:30	-	-	-	1	8	-	-	-	-	-	6	6	**21**	84
13:30	13:45	-	-	-	1	11	-	1	-	-	-	5	7	**25**	78
13:45	14:00	-	-	-	-	3	-	2	-	1	-	11	8	**25**	91
14:00	14:15	-	-	-	-	7	-	-	-	-	-	3	6	**16**	87
14:15	14:30	-	-	-	2	4	-	2	-	-	-	4	3	**15**	81
14:30	14:45	-	-	-	1	4	-	1	-	1	-	10	3	**20**	76
14:45	15:00	-	-	-	3	7	-	4	-	1	-	6	6	**27**	78
15:00	15:15	-	-	-	-	10	-	1	-	-	-	7	2	**20**	
15:15	15:30	-	-	-	1	2	-	3	-	-	-	4	7	**17**	
15:30	15:45	-	-	-	2	7	-	2	-	-	-	7	6	**24**	
15:45	16:00	-	-	-	-	7	-	-	-	-	-	11	2	**20**	81
16:00	16:15	-	-	-	4	3	-	3	-	-	-	2	2	**14**	75
16:15	16:30	-	-	-	-	8	-	1	1	-	-	10	1	**21**	79
16:30	16:45	-	-	-	1	7	-	-	-	-	-	9	3	**20**	75
16:45	17:00	-	-	-	1	4	-	2	-	-	-	7	4	**18**	73
17:00	17:15	-	-	-	1	4	-	-	1	-	-	9	-	**15**	74
17:15	17:30	-	-	-	-	3	-	-	-	-	-	2	-	**5**	58
17:30	17:45	-	-	-	-	10	-	1	-	-	-	-	-	**11**	49
17:45	18:00	-	-	-	-	5	-	1	-	-	-	3	4	**13**	44
TOTAL		**-**	**-**	**-**	**44**	**289**	**-**	**57**	**3**	**5**	**-**	**263**	**190**	**851**	

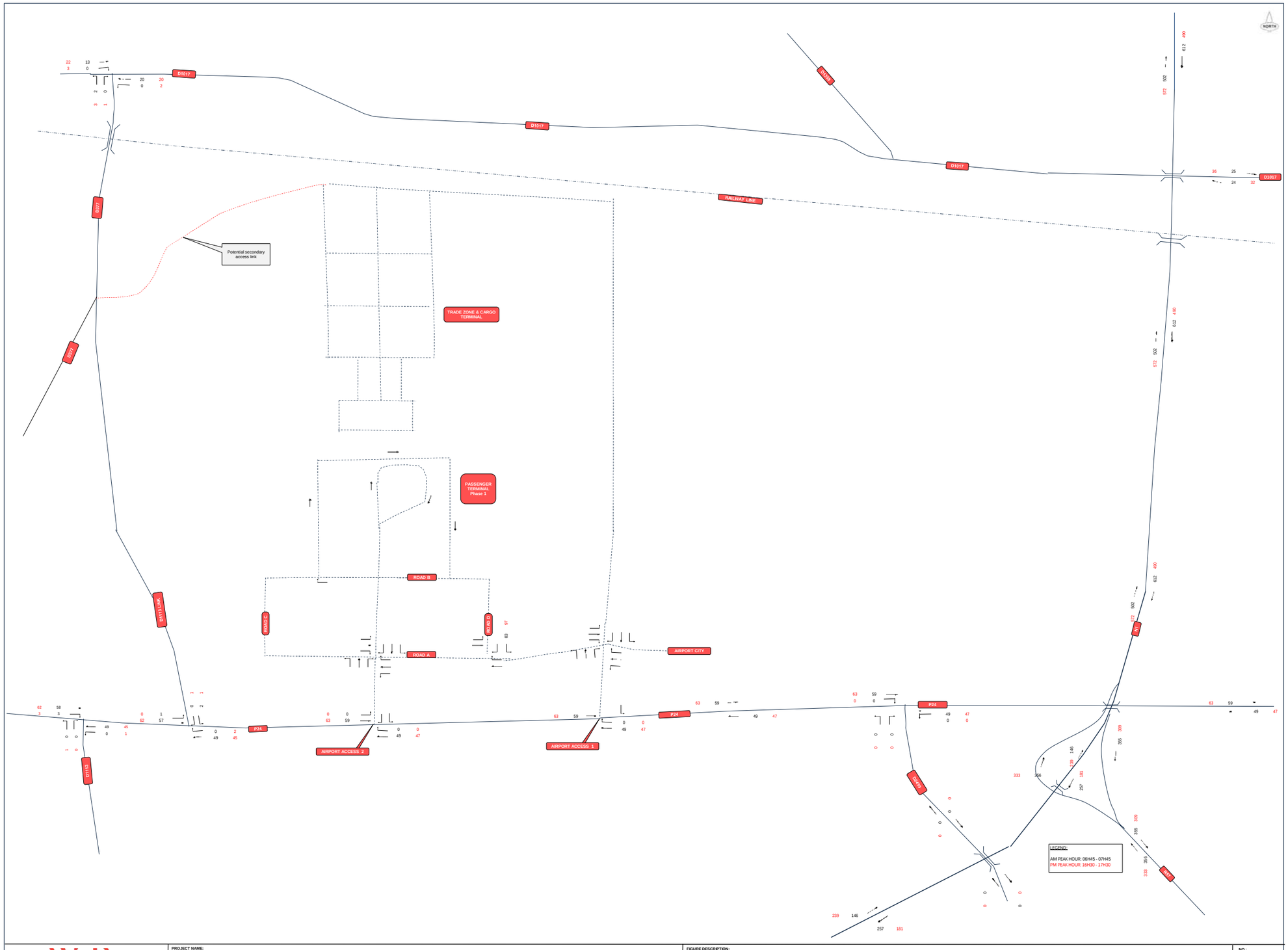
PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
07:45	08:45	-	-	-	2	25	-	6	-	-	-	29	13	**75**	**AM PEAK**
07:45	08:45	-	-	-	0.50	0.78	-	0.50	-	-	-	0.91	0.54	**0.82**	**AM PHF**
13:00	14:00	-	-	-	3	29	-	3	-	1	-	26	29	**91**	**MID PEAK**
13:00	14:00	-	-	-	0.75	0.66	-	0.38	-	0.25	-	0.59	0.91	**0.91**	**MID PHF**
15:00	16:00	-	-	-	3	26	-	6	-	-	-	29	17	**81**	**PM PEAK**
15:00	16:00	-	-	-	0.38	0.65	-	0.21	-	-	-	0.66	0.61	**0.84**	**PM PHF**

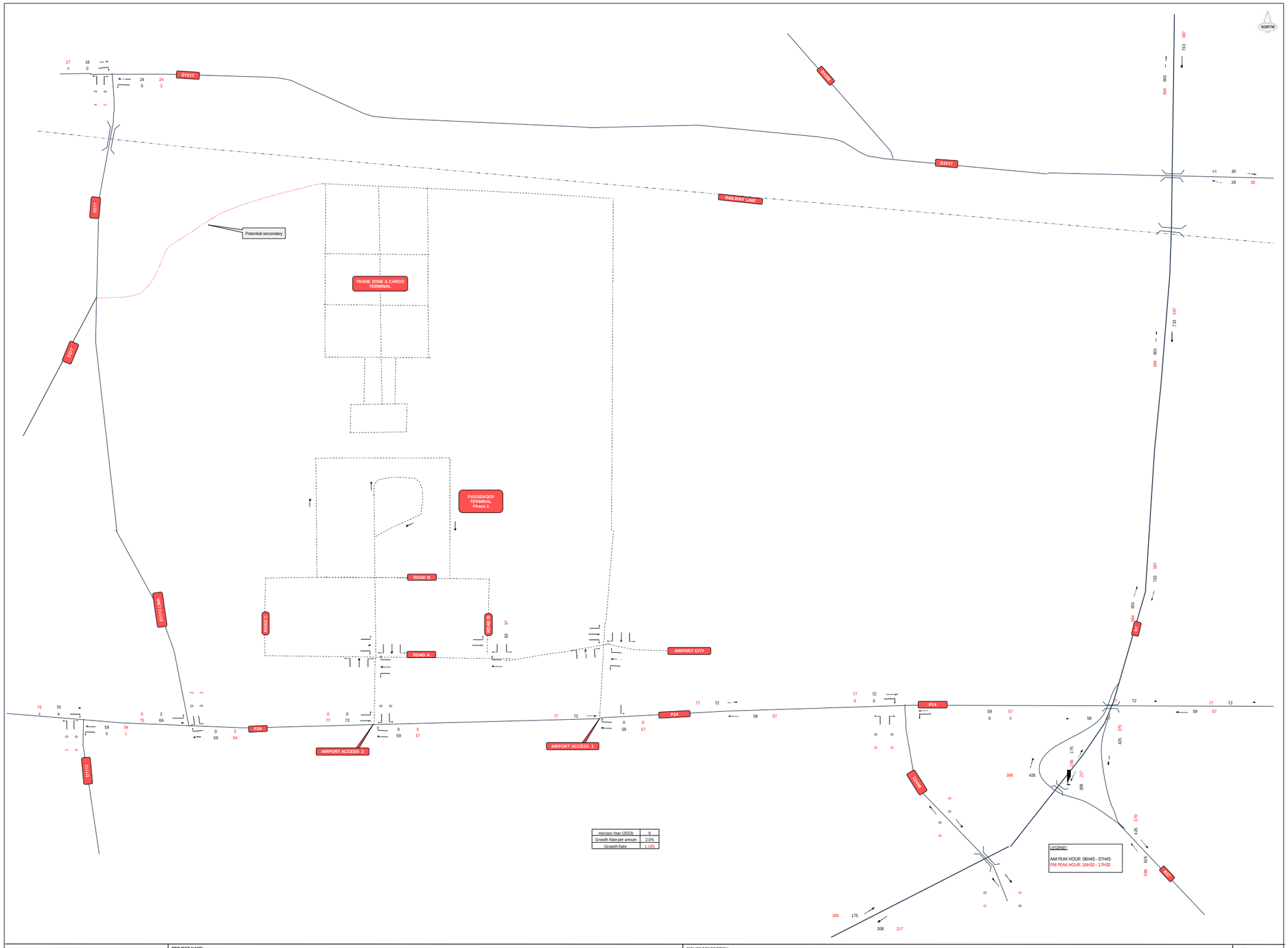
PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	6	65	-	17	1	-	-	47	46	**182**	**AM TOTAL**
09:00	15:00	-	-	-	28	154	-	26	-	5	-	145	113	**471**	**MID TOTAL**
15:00	18:00	-	-	-	10	70	-	14	2	-	-	71	31	**198**	**PM TOTAL**

Appendix C – Traffic Volumes Figures

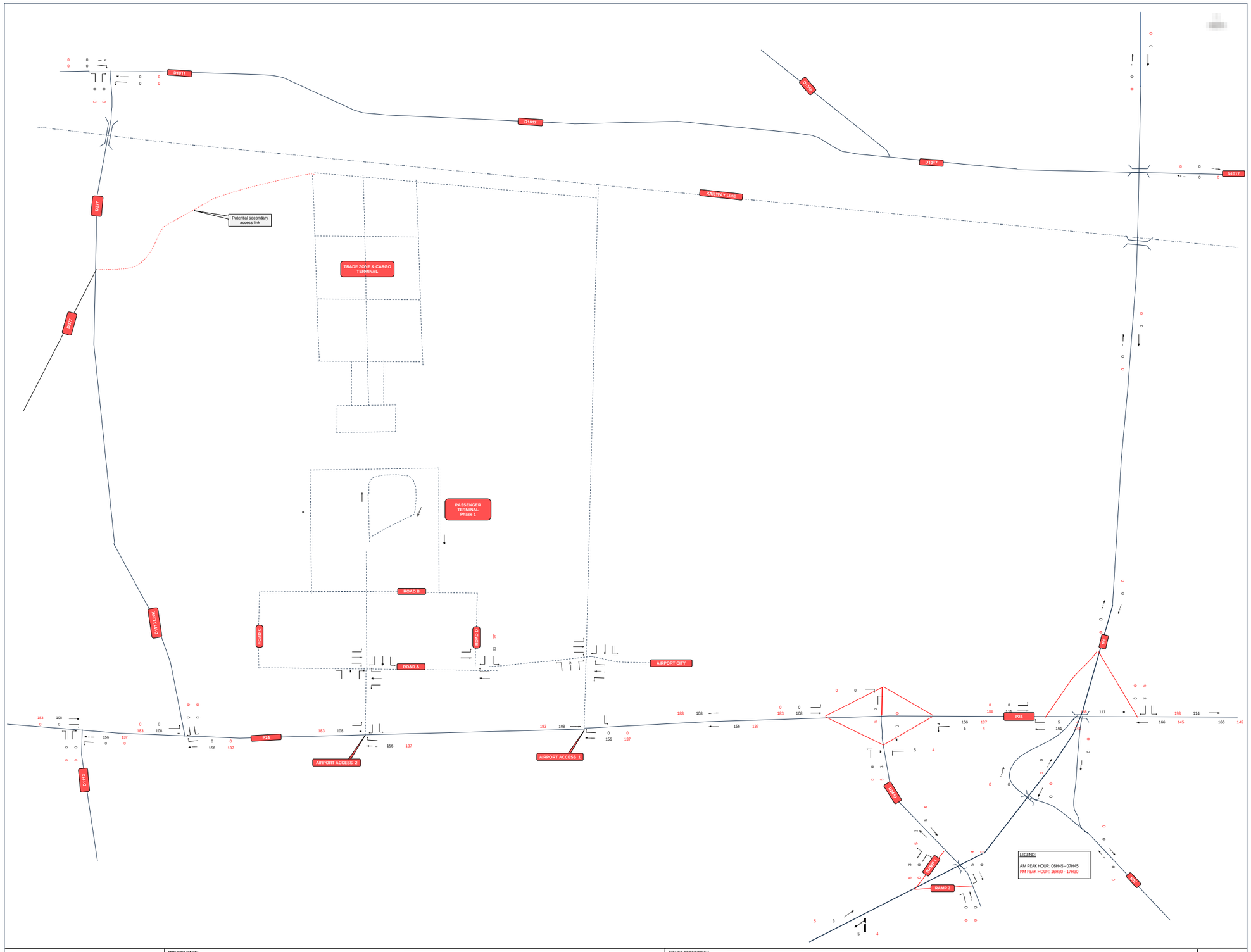


PROJECT NAME:	FIGURE DESCRIPTION:	NO.:
VAAL AEROTROPOLIS PHASE 1	2024 BACKGROUND PEAK HOUR TRAFFIC VOLUMES - N1/P24/D2459 SPLIT DIAMOND INTERCHANGE	N1 SDI C-1



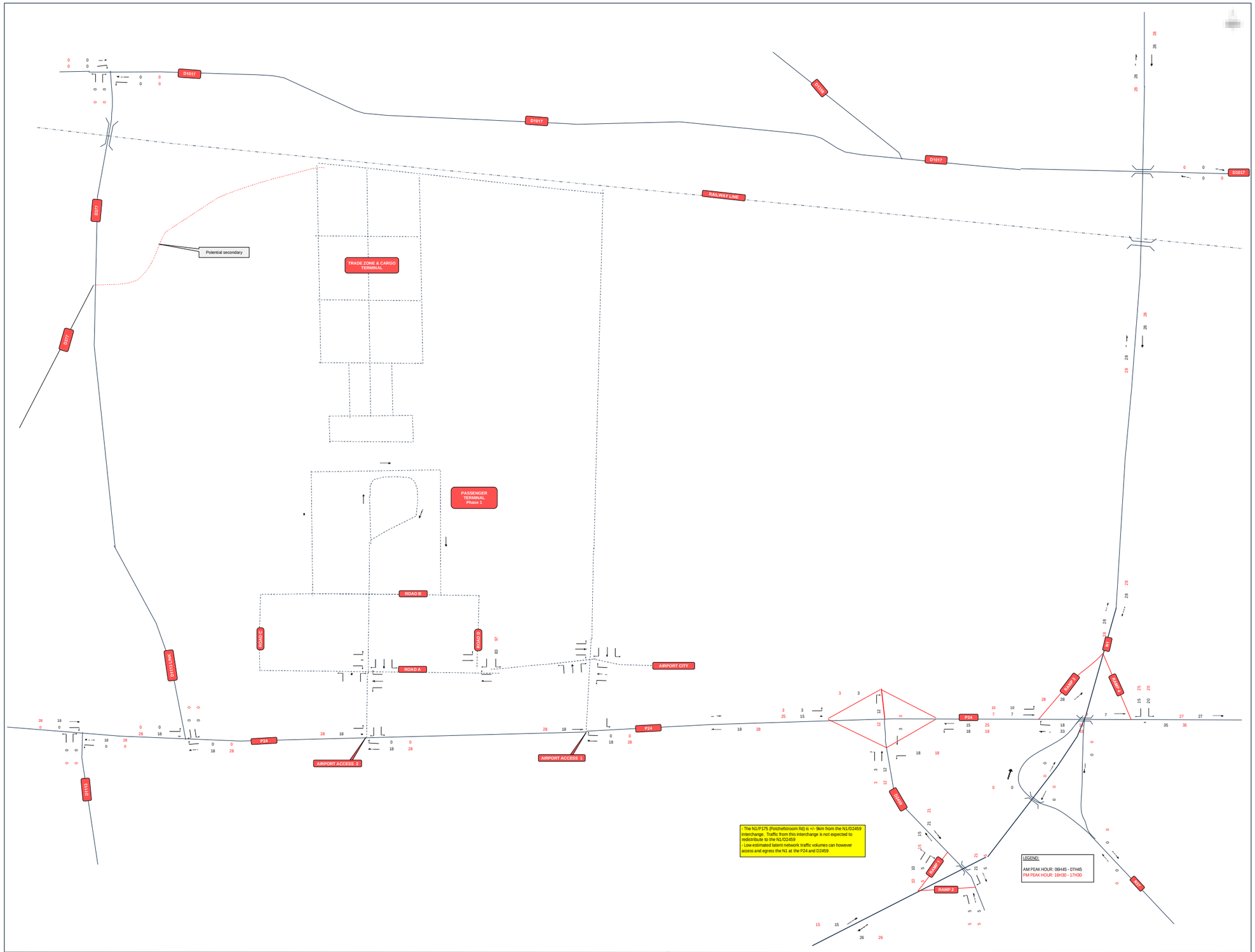
Horizon Year (2033)	9
Growth Rate per annum	2.0%
Growth Rate	1.195

wsp	PROJECT NAME: VAAL AEROTROPOLIS PHASE 1	FIGURE DESCRIPTION: 2033 BACKGROUND PEAK HOUR TRAFFIC VOLUMES - N1/P24/D2459 SPLIT DIAMOND INTERCHANGE	NO.: N1 SDI C-1

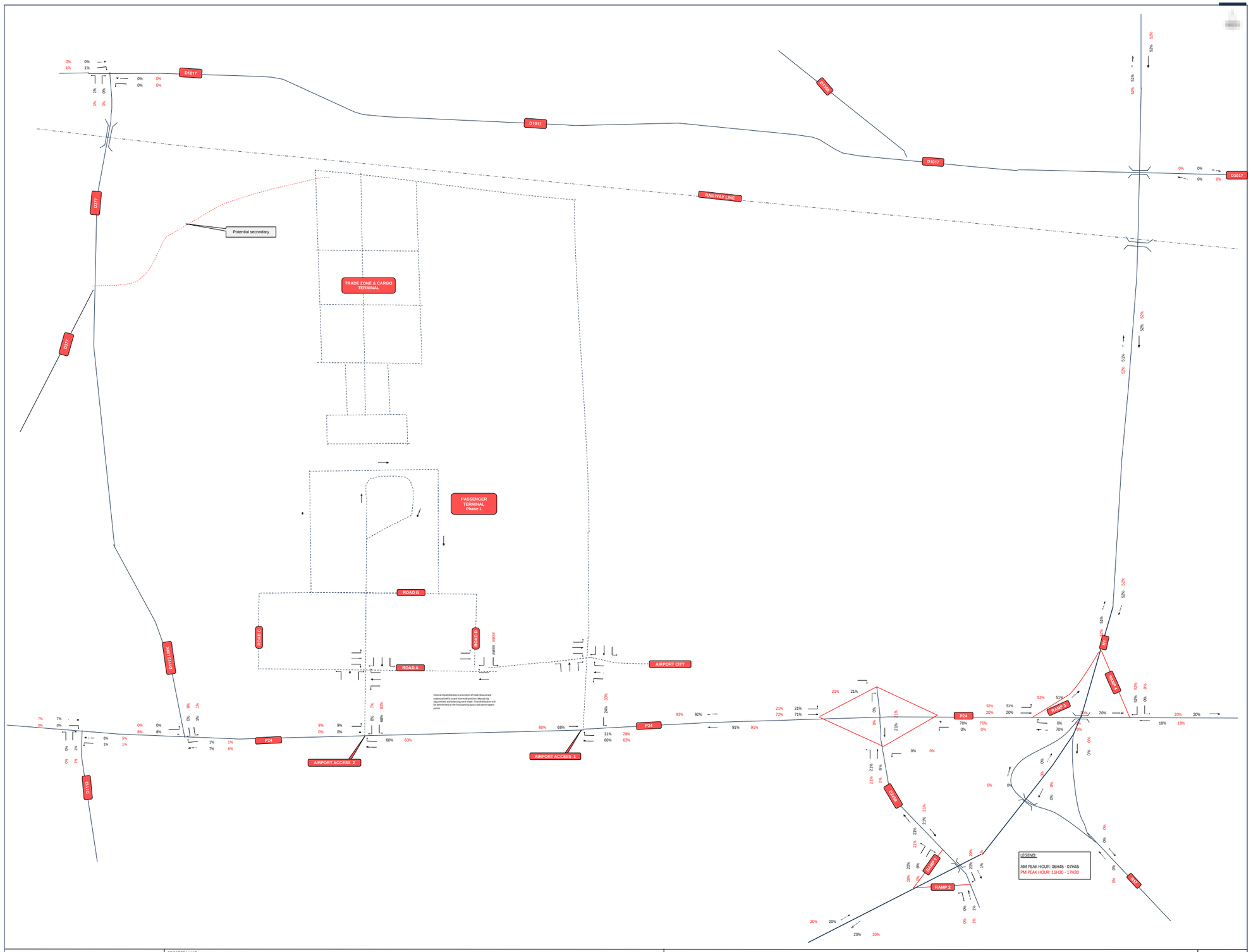


	PROJECT NAME:	FIGURE DESCRIPTION:	NO.:
wsp	VAAL AEROTROPOLIS PHASE 1	2033 LATENT DEVELOPMENT TRIPS ON THE P24 & N1/P24/D2459 SPLIT DIAMOND INTERCHANGE	N1 SDI C-3

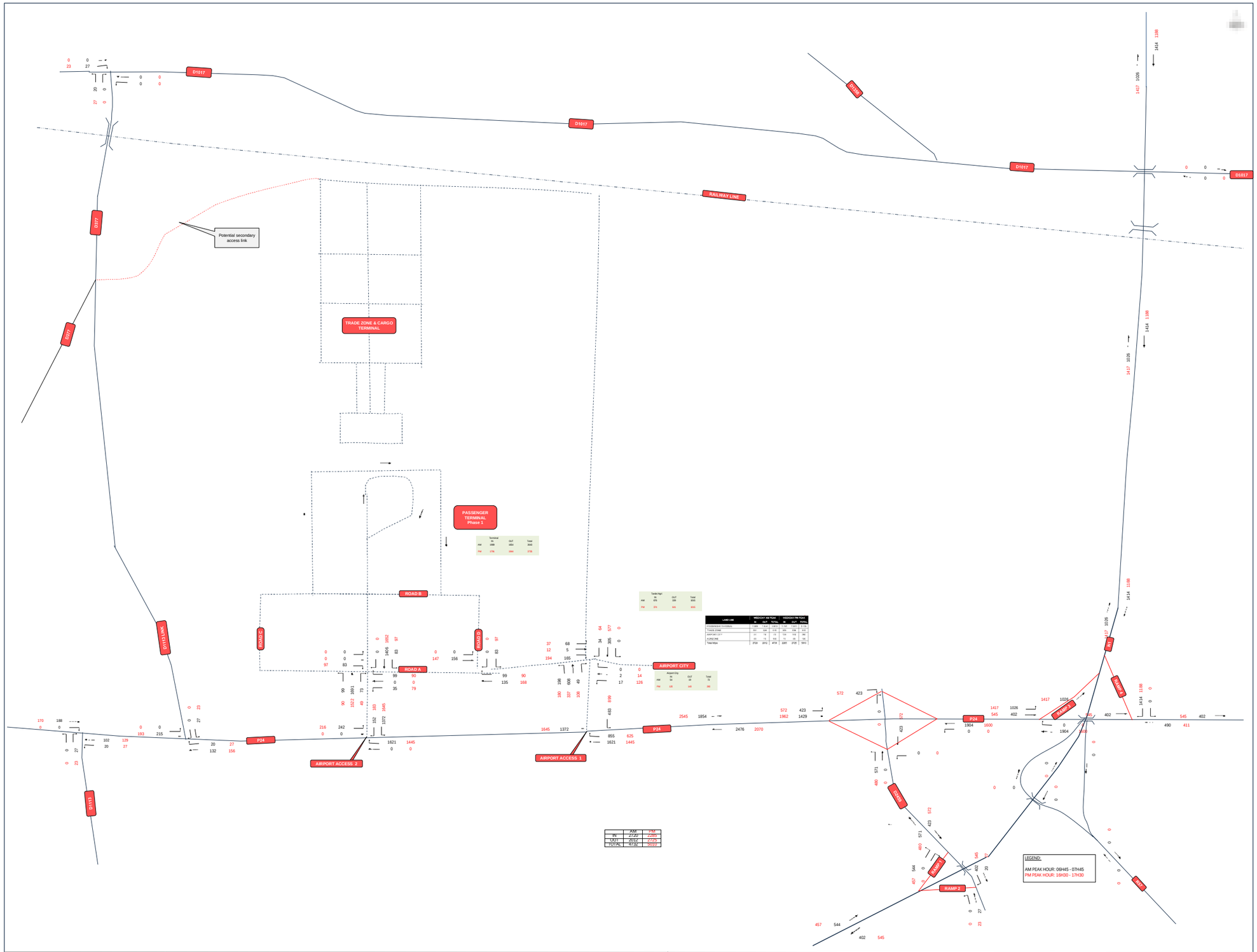
d0203306_TripModel_N1P24D2459-FINAL.dwg Latest Trips-SDI



PROJECT NAME:	FIGURE DESCRIPTION:	NO.:
VAAL AEROTROPOLIS PHASE 1	2033 LATENT NETWORK TRIPS DUE TO THE N1/P24/D2459 SPLIT DIAMOND INTERCHANGE	N1 SDI C-4



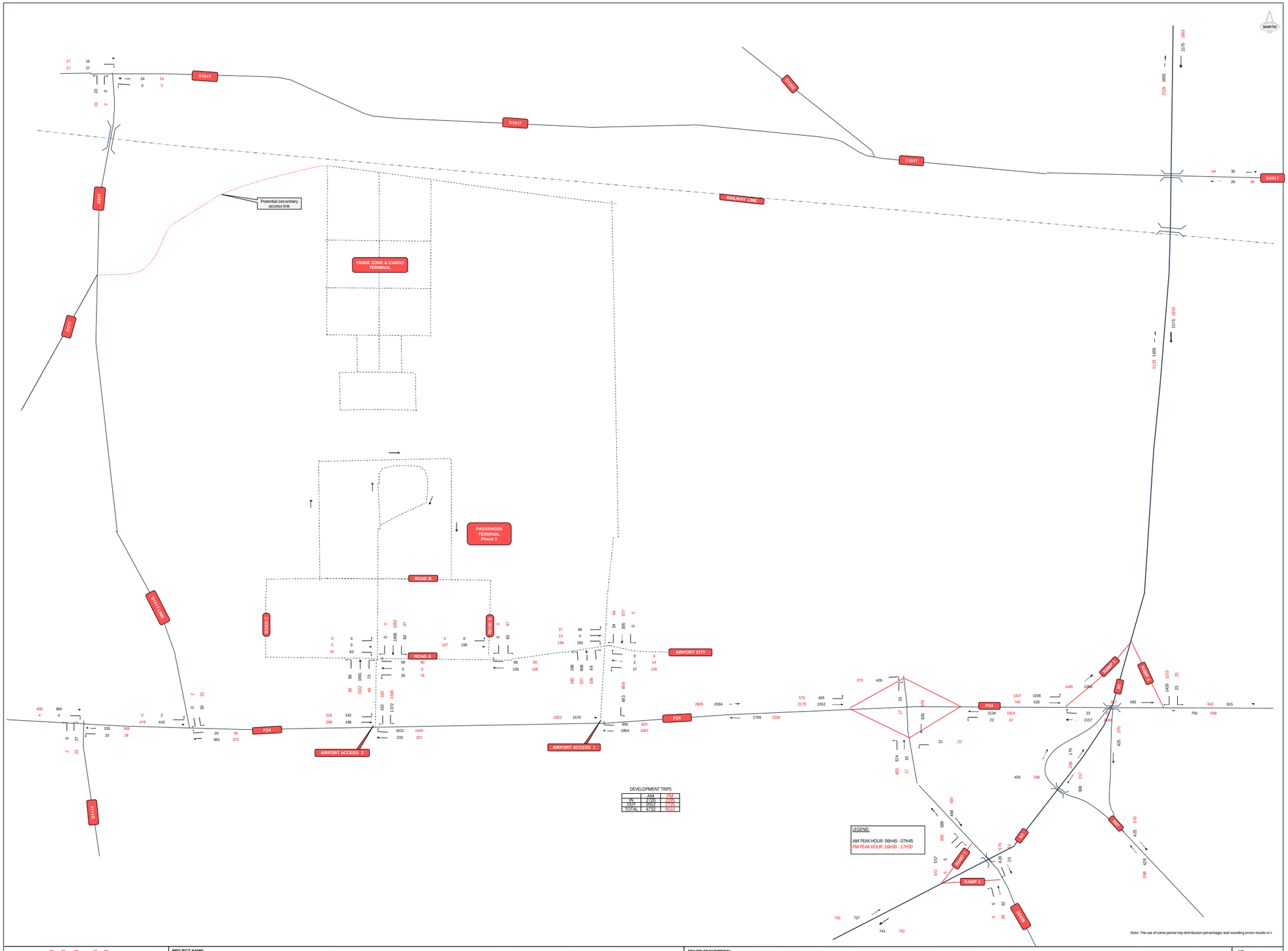
PROJECT NAME:	FIGURE DESCRIPTION:	NO.:
VAAL AEROTROPOLIS PHASE 1	TOTAL TRIP DISTRIBUTION FOR PHASE 1 - N1 / P24 / D2459 SPLIT DIAMOND INTERCHANGE	N1 SDI C-5



LAND USE	WEEKDAY AM PEAK			WEEKDAY PM PEAK		
	IN	OUT	TOTAL	IN	OUT	TOTAL
PASSENGER TERMINAL	1 389	1 424	2 813	2 154	2 211	4 365
TRADE ZONE	231	104	335	185	158	343
AIRPORT CITY	11	19	30	104	114	218
AGRIZONE	22	15	37	15	20	35
Trips trips	2 753	2 772	5 714	2 457	2 703	5 161

	AM	PM
IN	2 753	2 457
OUT	2 772	2 703
TOTAL	5 525	5 161

PROJECT NAME:	FIGURE DESCRIPTION:	NO.:
VAAL AEROTROPOLIS PHASE 1	2033 TOTAL PEAK HOUR DEVELOPMENT TRIPS FOR PHASE 1 - N1 / P24 / D2459 SPLIT DIAMOND INTERCHANGE	N1 SDI C-6



DEVELOPMENT TRIPS

	AM	PM
IN	2720	2285
OUT	2012	2725
TOTAL	4732	5010

LEGEND:

AM PEAK HOUR: 06H45 - 07H45
PM PEAK HOUR: 16H30 - 17H30

Note: The use of some partial trip distribution percentages and rounding errors results in r

PROJECT NAME:	FIGURE DESCRIPTION:	NO.:
VAAL AEROTROPOLIS PHASE 1	2033 BACKGROUND TRAFFIC + LATENT NETWORK + LATENT DEVELOPMENT + PHASE 1 DEVELOPMENT TRIPS N1 / P24 / D2459 SPLIT DIAMOND	N1 SDI C-7

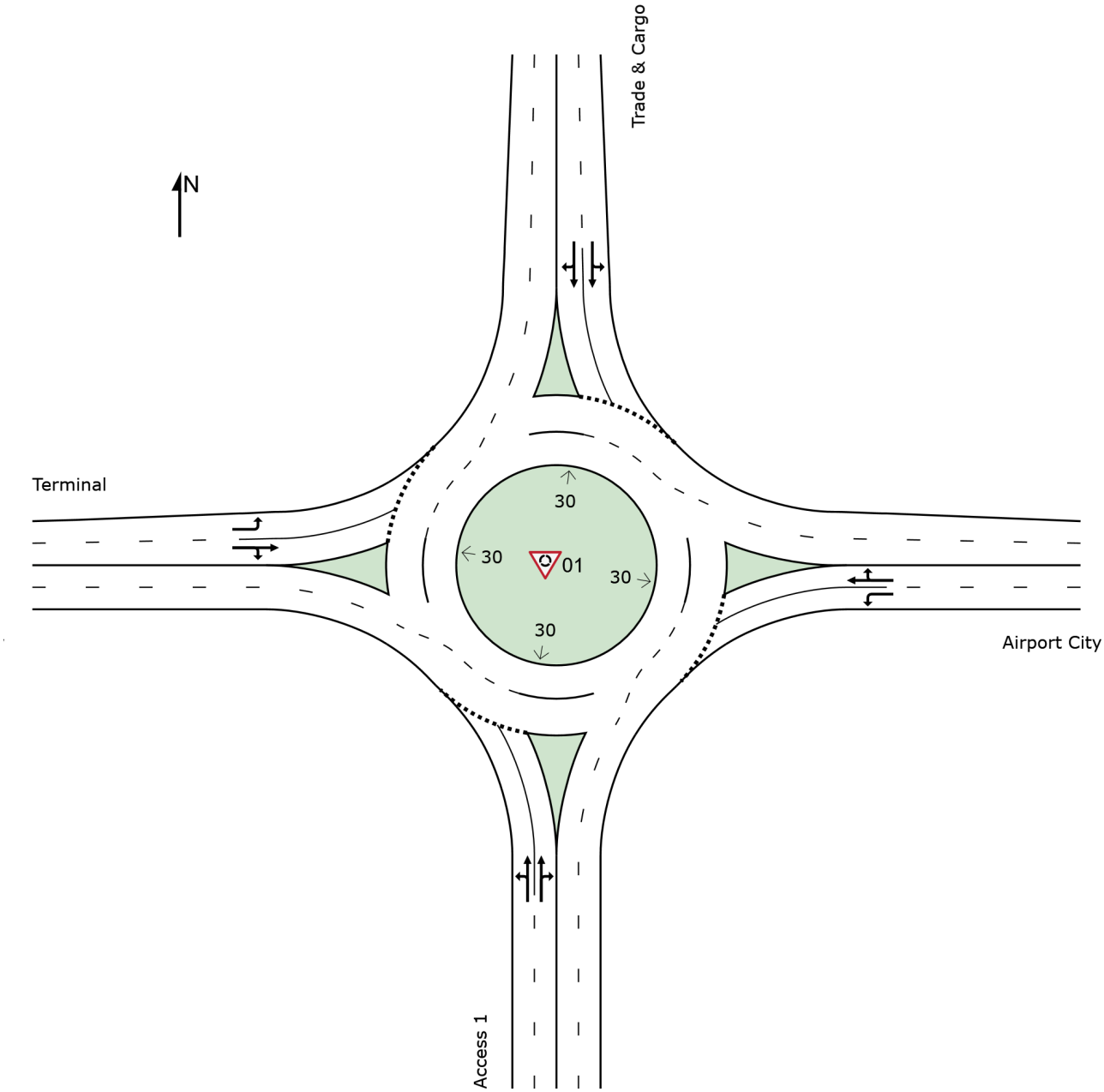
Appendix D – Detailed SIDRA Results

SITE LAYOUT

Site: [01] 2033 AM Peak Hour + Total Phase 1 Development Trips (General)

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 1 & Trade-Cargo Zone-Airport City Access
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SIDRA INTERSECTION 11 | Copyright © 2000-2026 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: WSP GROUP AFRICA (PTY) LTD | Licence: NETWORK / CLOUD | Created: Wednesday, 15 July 2026 14:25:54
Project: Z:\ZA\Projects\43100xxx\43103108 - VAAL - LAND PREPARATION\43 H&T\43 HT\01-D&D Docs\03-Outputs\01-Reports\01-Traffic Impact Assessment\SIDRA\N1 SDI.FINAL\Internal Junction 1 & Trade-Cargo Zone-Airport City Access.sipx

LANE LEVEL OF SERVICE

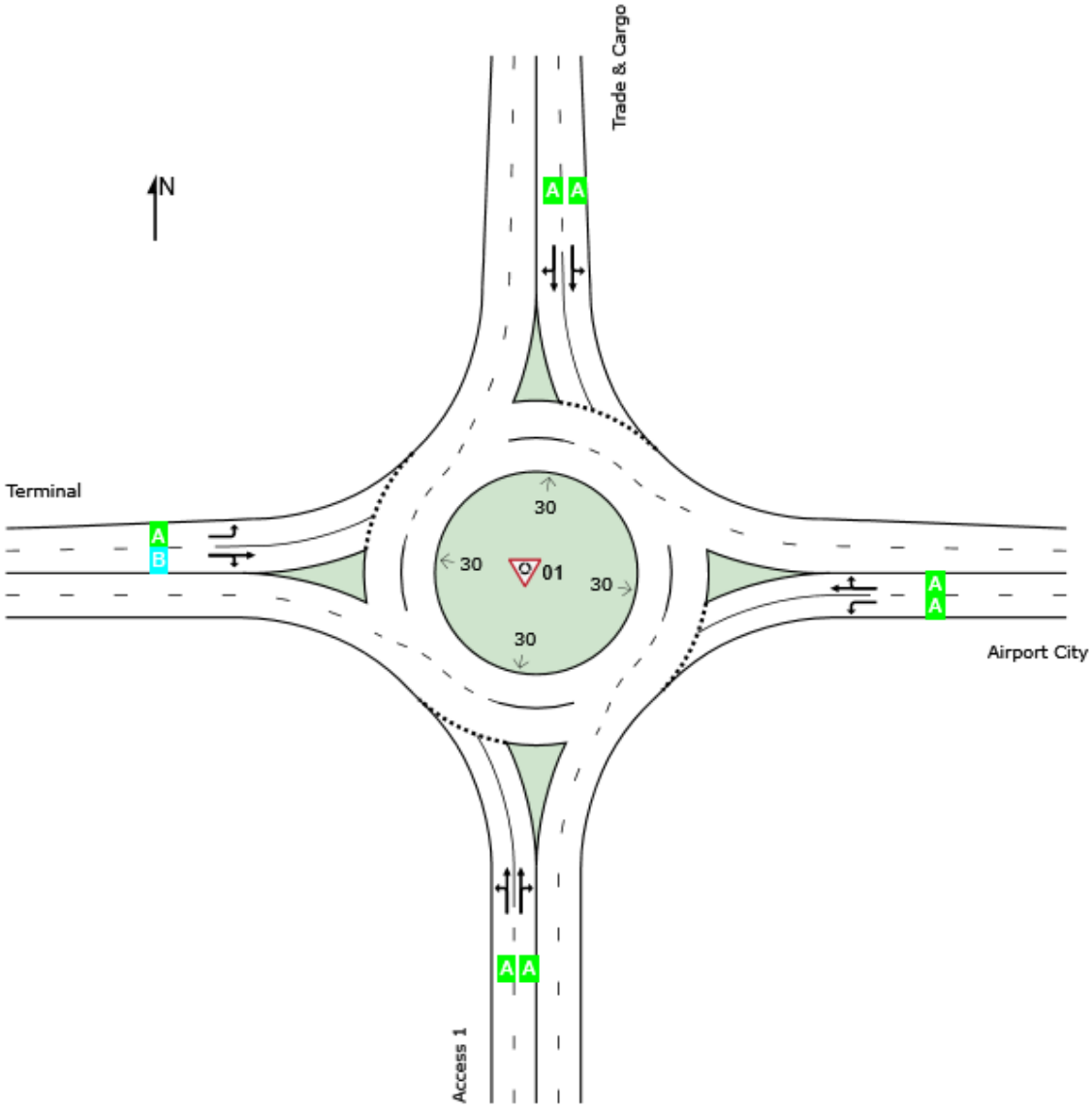
Lane Level of Service

Site: [01] 2033 AM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 1 & Trade-Cargo Zone-Airport City Access
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [01] 2033 AM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 1 & Trade-Cargo Zone-Airport City Access Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Access 1															
1	L2	All MCs	208	2.0	208	2.0	0.298	3.7	LOS A	1.9	13.7	0.17	0.37	0.17	56.6
2	T1	All MCs	640	2.0	640	2.0	0.298	3.7	LOS A	1.9	13.7	0.18	0.38	0.18	58.8
3	R2	All MCs	52	2.0	52	2.0	0.298	9.4	LOS A	1.9	13.6	0.18	0.38	0.18	54.6
Approach			900	2.0	900	2.0	0.298	4.1	LOS A	1.9	13.7	0.18	0.38	0.18	58.5
East: Airport City															
4	L2	All MCs	18	2.0	18	2.0	0.017	5.1	LOS A	0.1	0.5	0.48	0.53	0.48	55.5
5	T1	All MCs	2	2.0	2	2.0	0.005	6.6	LOS A	0.0	0.1	0.54	0.57	0.54	54.8
6	R2	All MCs	1	2.0	1	2.0	0.005	12.3	LOS B	0.0	0.1	0.54	0.57	0.54	57.8
Approach			21	2.0	21	2.0	0.017	5.6	LOS A	0.1	0.5	0.49	0.54	0.49	55.7
North: Trade & Cargo															
7	L2	All MCs	1	2.0	1	2.0	0.146	4.4	LOS A	0.7	5.0	0.36	0.42	0.36	58.4
8	T1	All MCs	321	2.0	321	2.0	0.146	4.4	LOS A	0.7	5.0	0.36	0.45	0.36	58.5
9	R2	All MCs	36	2.0	36	2.0	0.146	10.1	LOS B	0.7	4.9	0.36	0.49	0.36	58.2
Approach			358	2.0	358	2.0	0.146	4.9	LOS A	0.7	5.0	0.36	0.45	0.36	58.5
West: Terminal															
10	L2	All MCs	72	2.0	72	2.0	0.091	6.1	LOS A	0.3	2.4	0.51	0.64	0.51	58.5
11	T1	All MCs	5	2.0	5	2.0	0.163	5.3	LOS A	0.7	4.8	0.50	0.71	0.50	52.6
12	R2	All MCs	174	2.0	174	2.0	0.163	10.9	LOS B	0.7	4.8	0.50	0.71	0.50	52.8
Approach			251	2.0	251	2.0	0.163	9.4	LOS A	0.7	4.8	0.50	0.69	0.50	55.7
All Vehicles			1529	2.0	1529	2.0	0.298	5.2	LOS A	1.9	13.7	0.28	0.45	0.28	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

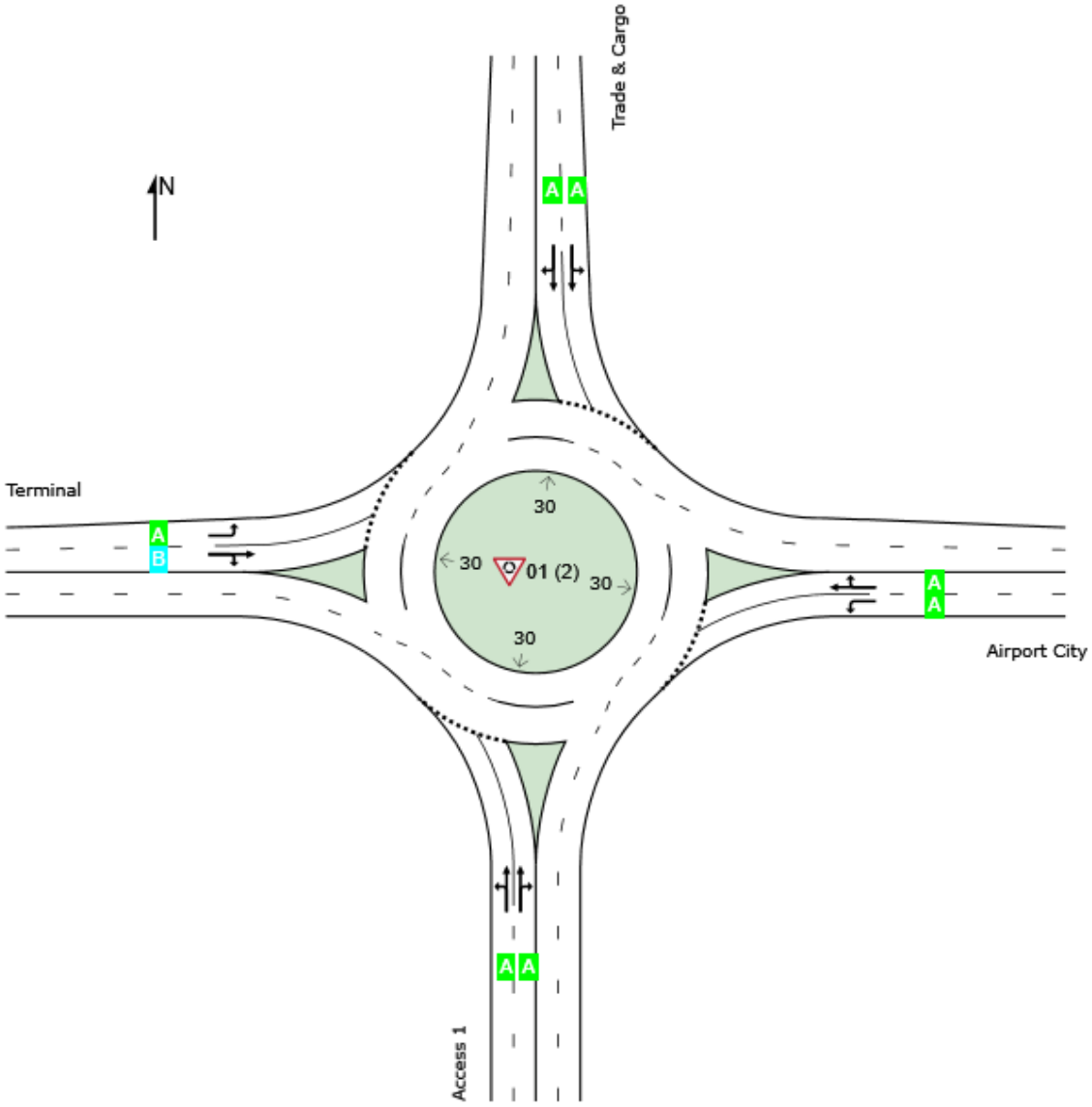
Lane Level of Service

Site: [01 (2)] 2033 PM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 1 & Trade-Cargo Zone-Airport City Access
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [01 (2)] 2033 PM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 1 & Trade-Cargo Zone-Airport City Access Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Access 1															
1	L2	All MCs	189	2.0	189	2.0	0.235	3.9	LOS A	1.4	10.1	0.26	0.39	0.26	56.3
2	T1	All MCs	355	2.0	355	2.0	0.235	3.9	LOS A	1.4	10.1	0.26	0.44	0.26	58.6
3	R2	All MCs	114	2.0	114	2.0	0.235	9.6	LOS A	1.4	10.0	0.27	0.47	0.27	53.5
Approach			658	2.0	658	2.0	0.235	4.9	LOS A	1.4	10.1	0.26	0.43	0.26	57.9
East: Airport City															
4	L2	All MCs	133	2.0	133	2.0	0.148	6.3	LOS A	0.7	5.2	0.64	0.68	0.64	55.0
5	T1	All MCs	15	2.0	15	2.0	0.030	8.1	LOS A	0.1	0.9	0.64	0.68	0.64	54.9
6	R2	All MCs	1	2.0	1	2.0	0.030	13.8	LOS B	0.1	0.9	0.64	0.68	0.64	57.9
Approach			148	2.0	148	2.0	0.148	6.5	LOS A	0.7	5.2	0.64	0.68	0.64	55.1
North: Trade & Cargo															
7	L2	All MCs	1	2.0	1	2.0	0.293	5.0	LOS A	1.6	11.4	0.47	0.48	0.47	58.3
8	T1	All MCs	607	2.0	607	2.0	0.293	5.0	LOS A	1.6	11.4	0.47	0.51	0.47	58.4
9	R2	All MCs	67	2.0	67	2.0	0.293	10.7	LOS B	1.6	11.1	0.48	0.54	0.48	58.1
Approach			676	2.0	676	2.0	0.293	5.5	LOS A	1.6	11.4	0.47	0.51	0.47	58.4
West: Terminal															
10	L2	All MCs	39	2.0	39	2.0	0.054	5.9	LOS A	0.2	1.4	0.47	0.60	0.47	58.5
11	T1	All MCs	13	2.0	13	2.0	0.185	4.8	LOS A	0.8	5.7	0.45	0.67	0.45	52.8
12	R2	All MCs	204	2.0	204	2.0	0.185	10.5	LOS B	0.8	5.7	0.45	0.67	0.45	53.0
Approach			256	2.0	256	2.0	0.185	9.5	LOS A	0.8	5.7	0.45	0.66	0.45	54.8
All Vehicles			1738	2.0	1738	2.0	0.293	6.0	LOS A	1.6	11.4	0.40	0.52	0.40	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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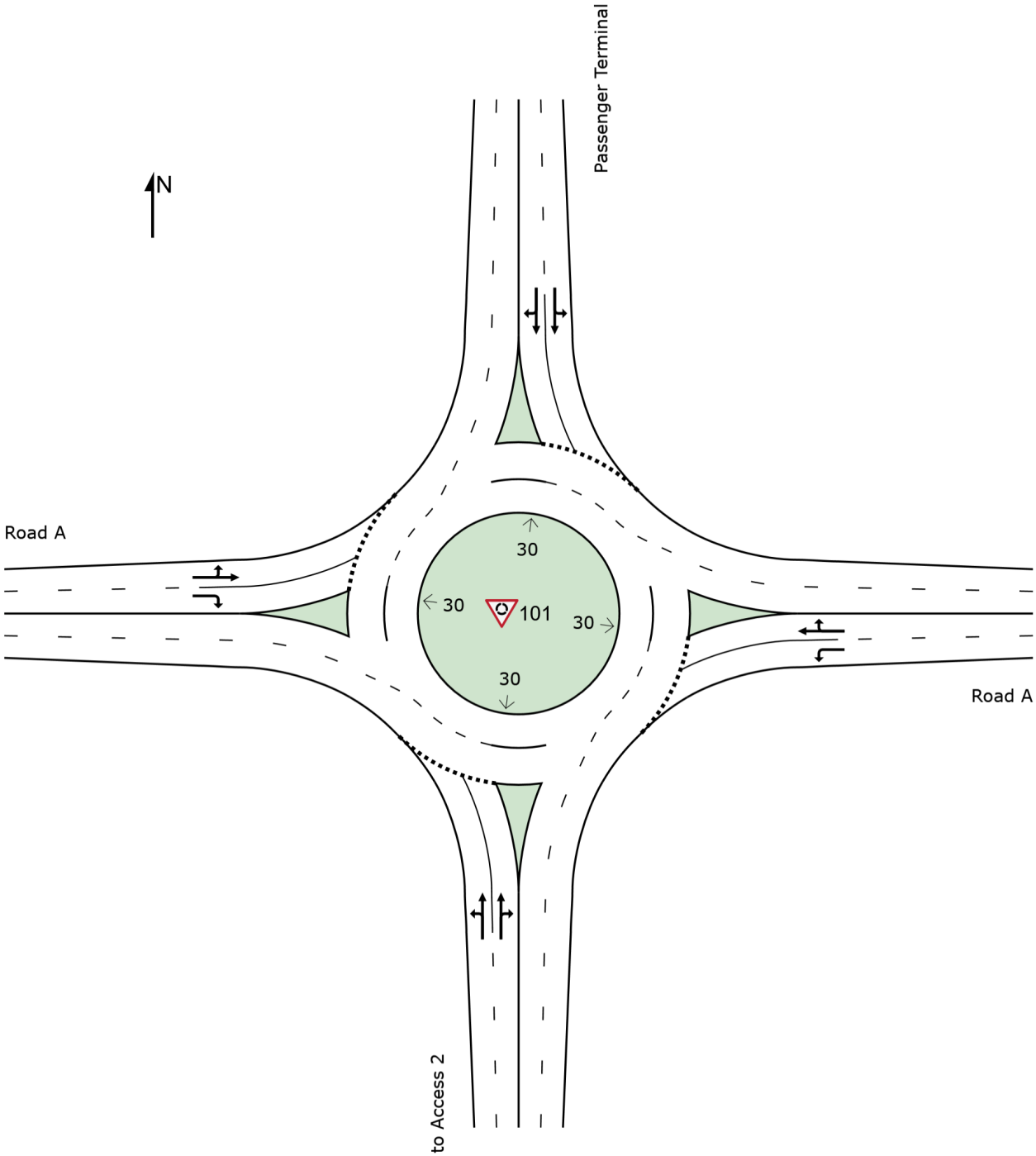
SITE LAYOUT

Site: [101] 2033 AM peak Total hase 1 Development Trips
(General)

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



LANE LEVEL OF SERVICE

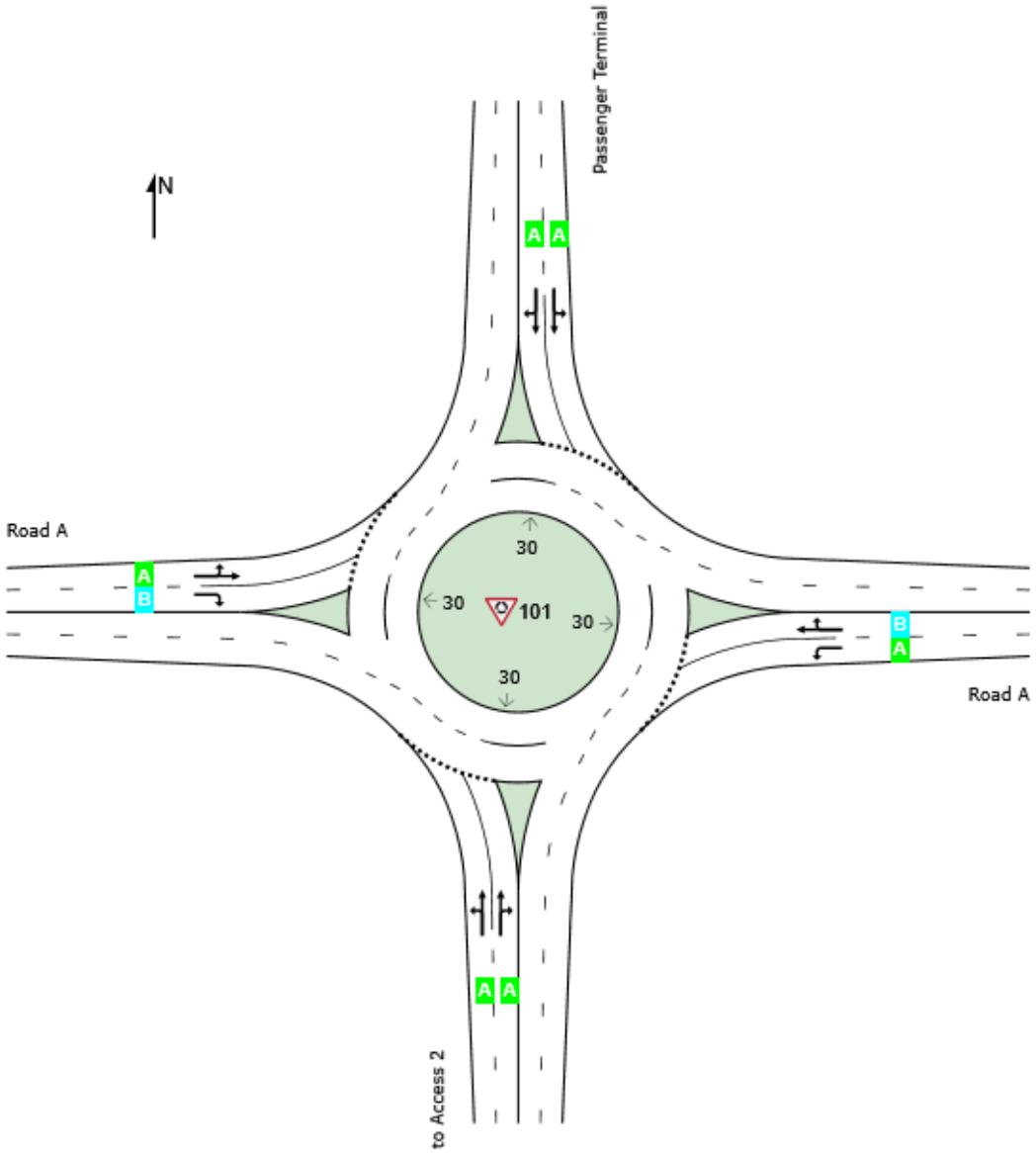
Lane Level of Service

Site: [101] 2033 AM peak Total hase 1 Development Trips
(General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	A	B	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [101] 2033 AM peak Total hase 1 Development Trips

(General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: to Access 2															
1	L2	All MCs	104	2.0	104	2.0	0.694	4.4	LOS A	7.6	54.2	0.50	0.42	0.50	56.2
2	T1	All MCs	1780	2.0	1780	2.0	0.694	4.3	LOS A	7.6	54.2	0.52	0.44	0.52	54.0
3	R2	All MCs	77	2.0	77	2.0	0.694	10.1	LOS B	7.5	53.4	0.53	0.45	0.53	53.3
Approach			1961	2.0	1961	2.0	0.694	4.6	LOS A	7.6	54.2	0.52	0.44	0.52	54.1
East: Road A															
4	L2	All MCs	37	2.0	37	2.0	0.072	8.4	LOS A	0.3	2.1	0.71	0.82	0.71	53.0
5	T1	All MCs	1	2.0	1	2.0	0.141	7.0	LOS A	0.7	4.9	0.73	0.84	0.73	51.6
6	R2	All MCs	104	2.0	104	2.0	0.141	12.7	LOS B	0.7	4.9	0.73	0.84	0.73	42.0
Approach			142	2.0	142	2.0	0.141	11.5	LOS B	0.7	4.9	0.73	0.83	0.73	46.2
North: Passenger Terminal															
7	L2	All MCs	87	2.0	87	2.0	0.586	4.5	LOS A	4.6	32.9	0.47	0.44	0.47	48.4
8	T1	All MCs	1480	2.0	1480	2.0	0.586	4.5	LOS A	4.6	32.9	0.48	0.45	0.48	54.3
9	R2	All MCs	1	2.0	1	2.0	0.586	10.3	LOS B	4.5	32.4	0.49	0.45	0.49	53.8
Approach			1568	2.0	1568	2.0	0.586	4.5	LOS A	4.6	32.9	0.48	0.45	0.48	54.2
West: Road A															
10	L2	All MCs	1	2.0	1	2.0	0.005	9.5	LOS A	0.0	0.1	0.77	0.68	0.77	52.4
11	T1	All MCs	1	2.0	1	2.0	0.005	9.4	LOS A	0.0	0.1	0.77	0.68	0.77	53.2
12	R2	All MCs	87	2.0	87	2.0	0.140	14.1	LOS B	0.7	5.2	0.81	0.87	0.81	53.0
Approach			89	2.0	89	2.0	0.140	14.0	LOS B	0.7	5.2	0.81	0.86	0.81	53.0
All Vehicles			3761	2.0	3761	2.0	0.694	5.0	LOS A	7.6	54.2	0.52	0.47	0.52	53.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

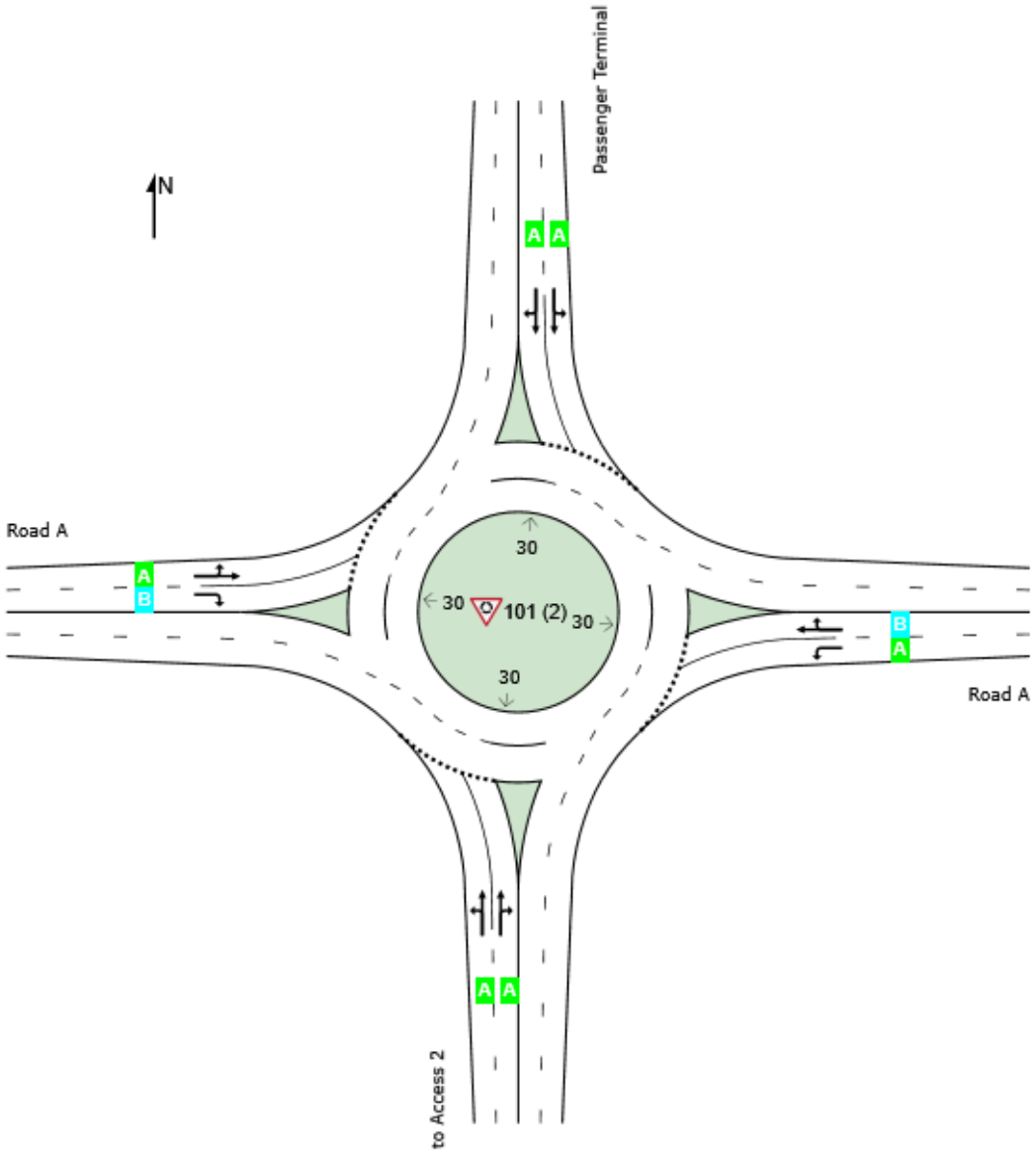
Lane Level of Service

Site: [101 (2)] 2033 PM peak Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	A	B	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [101 (2)] 2033 PM peak Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: to Access 2															
1	L2	All MCs	95	2.0	95	2.0	0.615	4.2	LOS A	6.0	42.8	0.43	0.40	0.43	56.4
2	T1	All MCs	1602	2.0	1602	2.0	0.615	4.2	LOS A	6.0	42.8	0.44	0.41	0.44	54.3
3	R2	All MCs	52	2.0	52	2.0	0.615	9.9	LOS A	5.9	41.9	0.45	0.42	0.45	53.6
Approach			1748	2.0	1748	2.0	0.615	4.3	LOS A	6.0	42.8	0.44	0.41	0.44	54.5
East: Road A															
4	L2	All MCs	83	2.0	83	2.0	0.190	10.0	LOS A	0.9	6.2	0.79	0.87	0.79	52.1
5	T1	All MCs	1	2.0	1	2.0	0.150	8.0	LOS A	0.8	5.5	0.80	0.86	0.80	51.1
6	R2	All MCs	95	2.0	95	2.0	0.150	13.6	LOS B	0.8	5.5	0.80	0.86	0.80	41.3
Approach			179	2.0	179	2.0	0.190	11.9	LOS B	0.9	6.2	0.80	0.87	0.80	47.8
North: Passenger Terminal															
7	L2	All MCs	102	2.0	102	2.0	0.680	4.7	LOS A	6.4	45.9	0.54	0.45	0.54	47.8
8	T1	All MCs	1739	2.0	1739	2.0	0.680	4.7	LOS A	6.4	45.9	0.55	0.46	0.55	54.0
9	R2	All MCs	1	2.0	1	2.0	0.680	10.4	LOS B	6.3	45.1	0.57	0.47	0.57	53.5
Approach			1842	2.0	1842	2.0	0.680	4.7	LOS A	6.4	45.9	0.55	0.46	0.55	53.8
West: Road A															
10	L2	All MCs	1	2.0	1	2.0	0.004	8.7	LOS A	0.0	0.1	0.72	0.65	0.72	52.9
11	T1	All MCs	1	2.0	1	2.0	0.004	8.6	LOS A	0.0	0.1	0.72	0.65	0.72	53.7
12	R2	All MCs	102	2.0	102	2.0	0.143	13.3	LOS B	0.7	5.0	0.76	0.85	0.76	53.3
Approach			104	2.0	104	2.0	0.143	13.2	LOS B	0.7	5.0	0.76	0.85	0.76	53.3
All Vehicles			3874	2.0	3874	2.0	0.680	5.1	LOS A	6.4	45.9	0.52	0.47	0.52	53.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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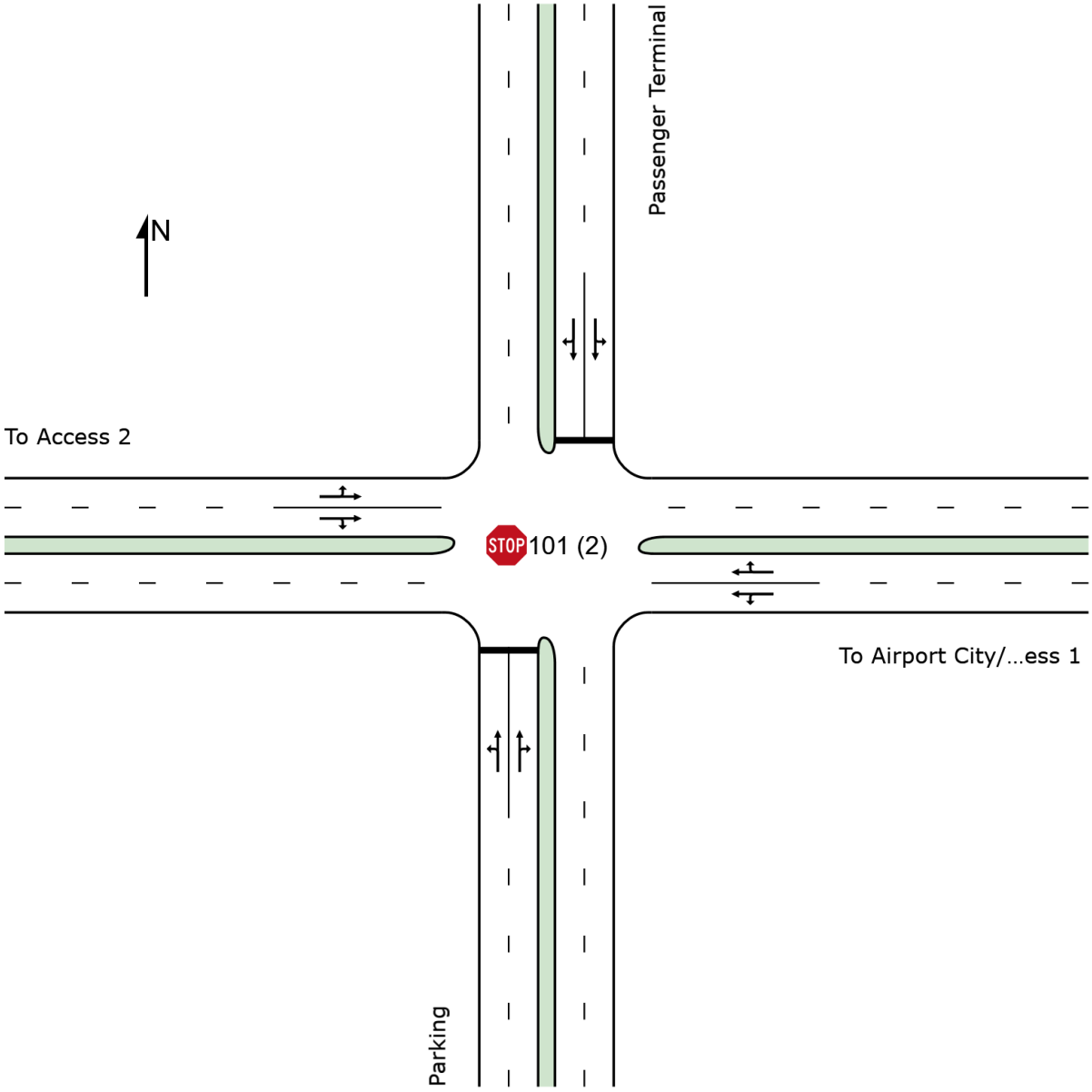
SITE LAYOUT

Site: [101 (2)] 2033 Background AM Peak Hour + Total Phase 1 Development Trips (General)

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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LANE LEVEL OF SERVICE

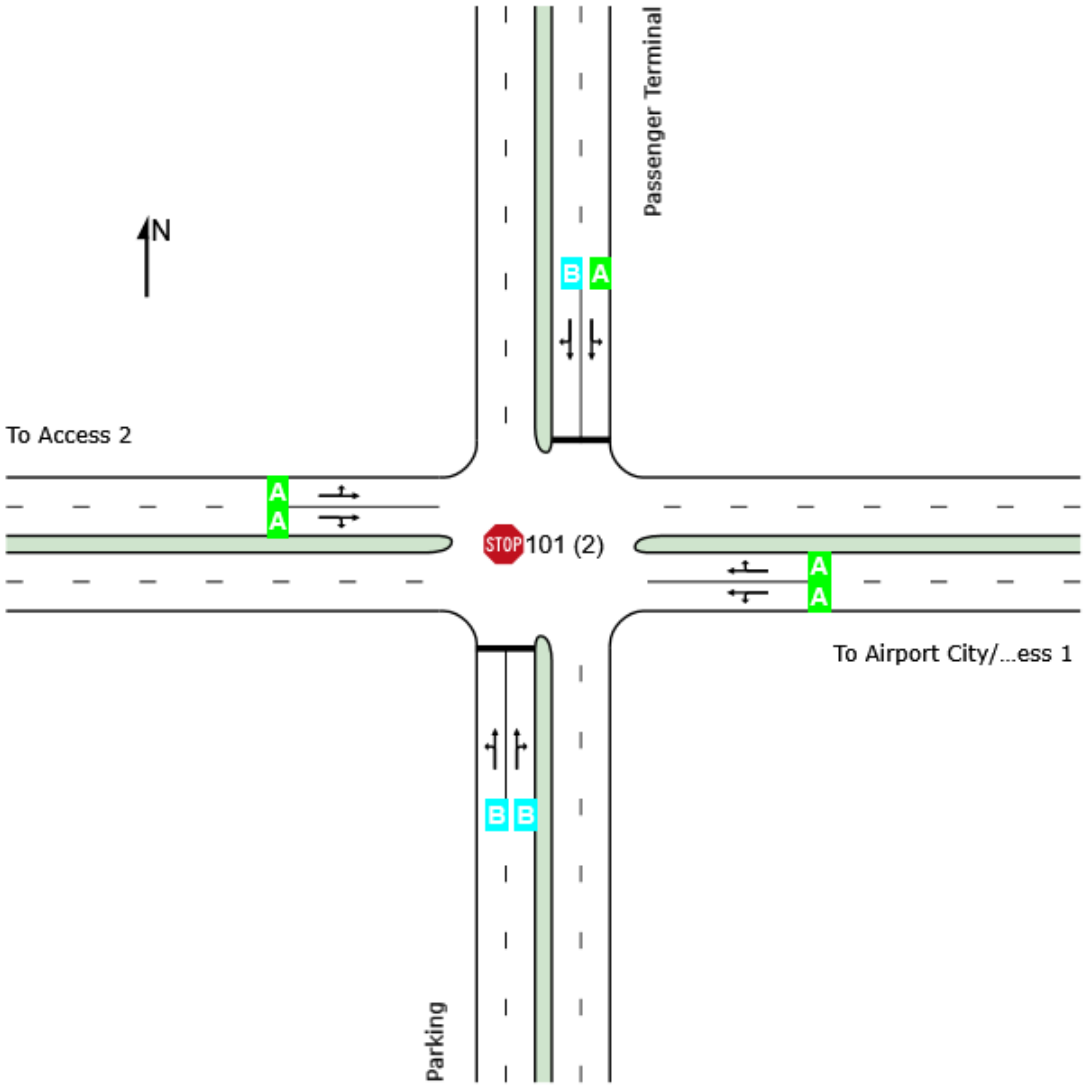
Lane Level of Service

Site: [101 (2)] 2033 Background AM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches				Intersection
	South	East	North	West	
LOS	B	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [101 (3)] 2033 Background PM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Parking															
1	L2	All MCs	1	0.0	1	0.0	0.003	8.7	LOS A	0.0	0.1	0.40	0.80	0.40	42.0
2	T1	All MCs	1	0.0	1	0.0	0.003	11.9	LOS B	0.0	0.1	0.41	0.80	0.41	48.5
3	R2	All MCs	1	0.0	1	0.0	0.003	14.7	LOS B	0.0	0.1	0.57	0.82	0.57	48.2
Approach			3	0.0	3	0.0	0.003	12.0	LOS B	0.0	0.1	0.46	0.80	0.46	46.9
East: To Airport City/Access 1															
4	L2	All MCs	1	0.0	1	0.0	0.084	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.6
5	T1	All MCs	177	2.0	177	2.0	0.084	0.1	LOS A	0.4	2.6	0.02	0.05	0.02	59.5
6	R2	All MCs	95	2.0	95	2.0	0.084	6.2	LOS A	0.4	2.6	0.27	0.50	0.27	55.2
Approach			273	2.0	273	2.0	0.084	2.2	NA	0.4	2.6	0.11	0.20	0.11	57.6
North: Passenger Terminal															
7	L2	All MCs	102	2.0	102	2.0	0.093	8.5	LOS A	0.4	2.5	0.18	0.90	0.18	54.0
8	T1	All MCs	1	0.0	1	0.0	0.004	12.4	LOS B	0.0	0.1	0.53	0.82	0.53	47.6
9	R2	All MCs	1	2.0	1	2.0	0.004	13.3	LOS B	0.0	0.1	0.53	0.82	0.53	48.6
Approach			104	2.0	104	2.0	0.093	8.6	LOS A	0.4	2.5	0.19	0.90	0.19	54.0
West: To Access 2															
10	L2	All MCs	1	2.0	1	2.0	0.041	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.4
11	T1	All MCs	155	2.0	155	2.0	0.041	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
12	R2	All MCs	1	0.0	1	0.0	0.041	5.8	LOS A	0.0	0.1	0.01	0.01	0.01	55.1
Approach			157	2.0	157	2.0	0.041	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.9
All Vehicles			537	2.0	537	2.0	0.093	2.9	NA	0.4	2.6	0.10	0.28	0.10	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

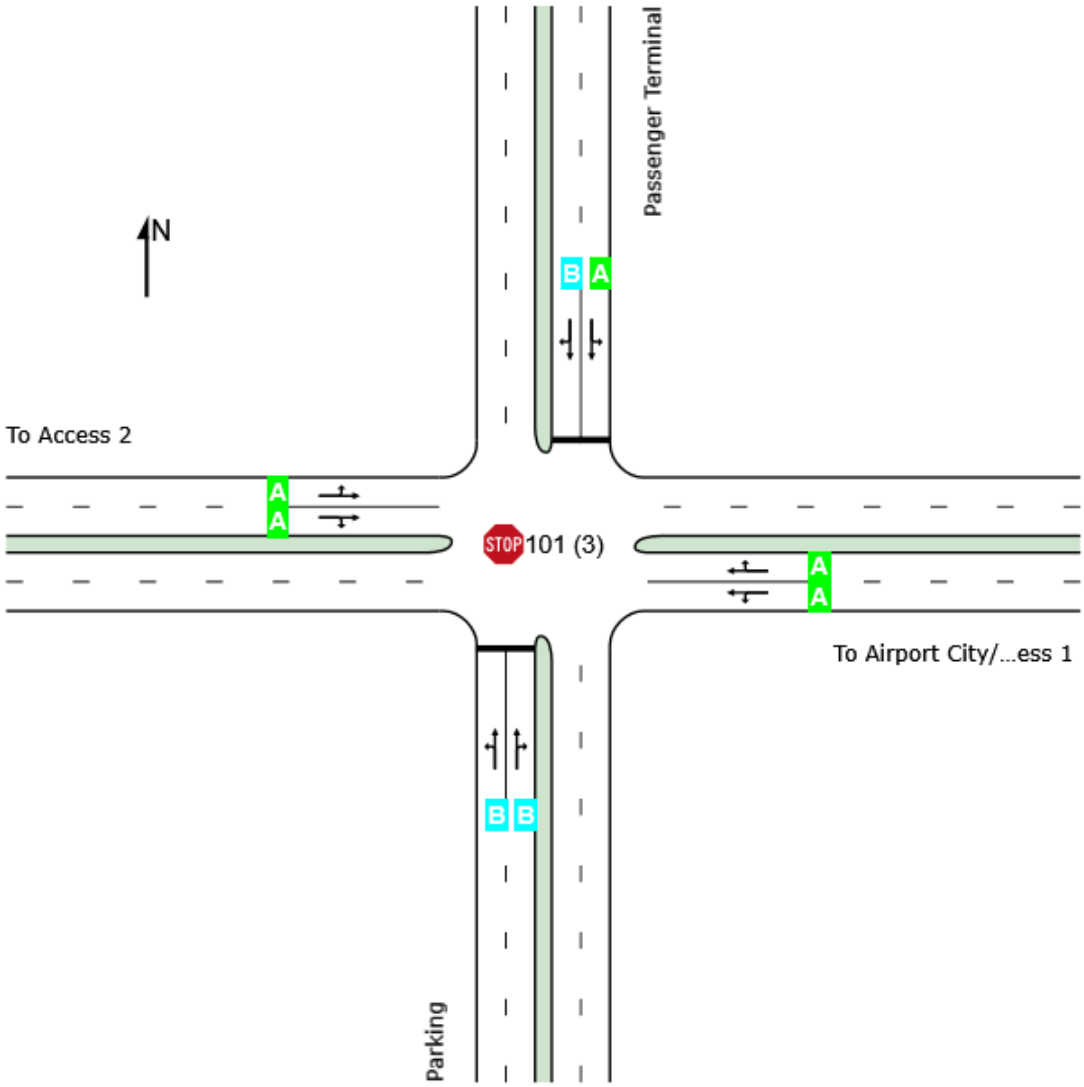
Lane Level of Service

Site: [101 (3)] 2033 Background PM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches				Intersection
	South	East	North	West	
LOS	B	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [101 (2)] 2033 Background AM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 & 3 Interchange)
Intersection: Internal Junction 2 & Passenger Terminal-Road A
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Parking															
1	L2	All MCs	1	0.0	1	0.0	0.003	8.6	LOS A	0.0	0.1	0.37	0.80	0.37	42.1
2	T1	All MCs	1	0.0	1	0.0	0.003	11.5	LOS B	0.0	0.1	0.39	0.80	0.39	48.4
3	R2	All MCs	1	0.0	1	0.0	0.003	14.2	LOS B	0.0	0.1	0.56	0.81	0.56	48.5
Approach			3	0.0	3	0.0	0.003	11.7	LOS B	0.0	0.1	0.44	0.80	0.44	47.1
East: To Airport City/Access 1															
4	L2	All MCs	1	0.0	1	0.0	0.074	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.6
5	T1	All MCs	142	2.0	142	2.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	104	2.0	104	2.0	0.085	6.3	LOS A	0.4	2.5	0.28	0.56	0.28	54.8
Approach			247	2.0	247	2.0	0.085	2.7	NA	0.4	2.5	0.12	0.24	0.12	57.2
North: Passenger Terminal															
7	L2	All MCs	87	2.0	87	2.0	0.080	8.5	LOS A	0.3	2.1	0.19	0.90	0.19	54.0
8	T1	All MCs	1	0.0	1	0.0	0.004	12.2	LOS B	0.0	0.1	0.52	0.82	0.52	47.7
9	R2	All MCs	1	2.0	1	2.0	0.004	13.1	LOS B	0.0	0.1	0.52	0.82	0.52	48.8
Approach			89	2.0	89	2.0	0.080	8.6	LOS A	0.3	2.1	0.20	0.90	0.20	53.9
West: To Access 2															
10	L2	All MCs	1	2.0	1	2.0	0.043	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.4
11	T1	All MCs	164	2.0	164	2.0	0.043	0.0	LOS A	0.0	0.1	0.00	0.01	0.00	59.9
12	R2	All MCs	1	0.0	1	0.0	0.043	5.7	LOS A	0.0	0.1	0.01	0.01	0.01	55.1
Approach			166	2.0	166	2.0	0.043	0.1	NA	0.0	0.1	0.00	0.01	0.00	59.9
All Vehicles			506	2.0	506	2.0	0.085	2.9	NA	0.4	2.5	0.10	0.28	0.10	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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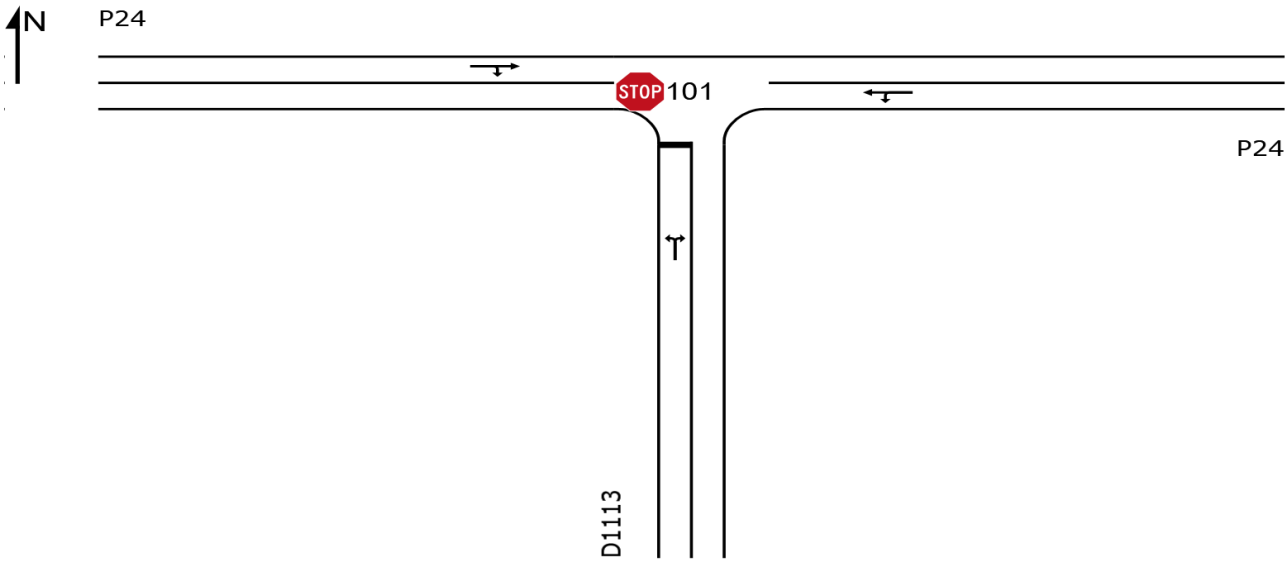
SITE LAYOUT

Site: [101] 2033 Background AM Peak Hour + Total Phase 1 Development Trips (General)

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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LANE LEVEL OF SERVICE

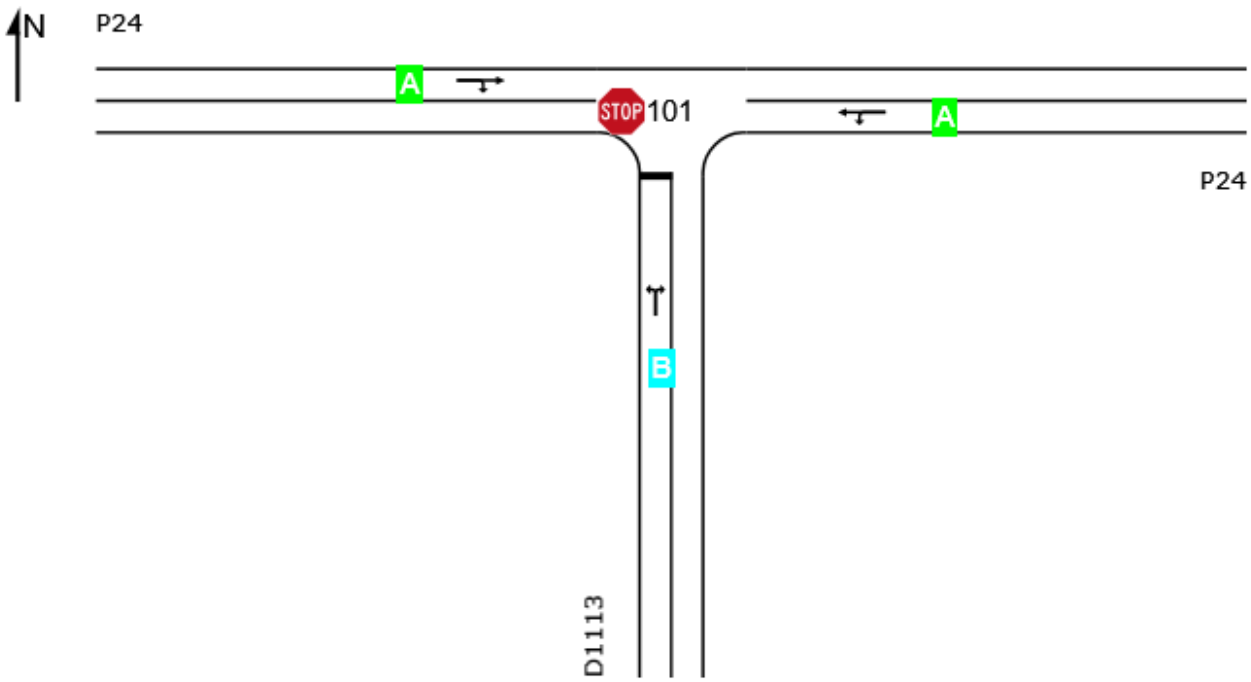
Lane Level of Service

Site: [101] 2033 Background AM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	East	West	
LOS	B	NA (TWSC)	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [101] 2033 Background AM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D1113															
1	L2	All MCs	1	2.0	1	2.0	0.070	10.0	LOS A	0.2	1.5	0.64	1.00	0.64	47.8
3	R2	All MCs	28	2.0	28	2.0	0.070	14.2	LOS B	0.2	1.5	0.64	1.00	0.64	47.5
Approach			29	2.0	29	2.0	0.070	14.0	LOS B	0.2	1.5	0.64	1.00	0.64	47.6
East: P24															
4	L2	All MCs	21	2.0	21	2.0	0.217	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	57.0
5	T1	All MCs	395	2.0	395	2.0	0.217	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach			416	2.0	416	2.0	0.217	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
West: P24															
11	T1	All MCs	441	2.0	441	2.0	0.233	0.0	LOS A	0.0	0.3	0.01	0.01	0.01	59.9
12	R2	All MCs	4	2.0	4	2.0	0.233	6.3	LOS A	0.0	0.3	0.01	0.01	0.01	57.0
Approach			445	2.0	445	2.0	0.233	0.1	NA	0.0	0.3	0.01	0.01	0.01	59.9
All Vehicles			891	2.0	891	2.0	0.233	0.7	NA	0.2	1.5	0.03	0.05	0.03	59.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

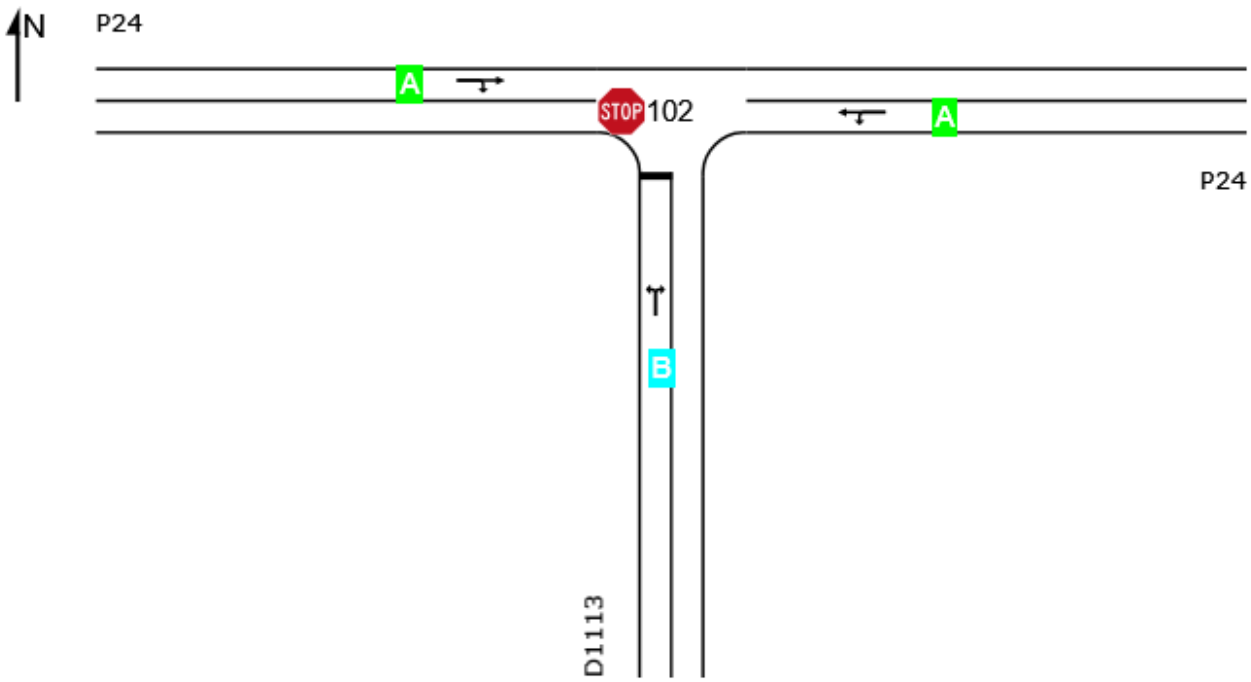
Lane Level of Service

Site: [102] 2033 Background PM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	East	West	
LOS	B	NA (TWSC)	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [102] 2033 Background PM Peak Hour + Total Phase 1 Development Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D1113															
1	L2	All MCs	2	2.0	2	2.0	0.056	9.1	LOS A	0.2	1.2	0.58	0.97	0.58	48.4
3	R2	All MCs	24	2.0	24	2.0	0.056	13.3	LOS B	0.2	1.2	0.58	0.97	0.58	48.1
Approach			26	2.0	26	2.0	0.056	13.0	LOS B	0.2	1.2	0.58	0.97	0.58	48.1
East: P24															
4	L2	All MCs	29	2.0	29	2.0	0.145	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	56.8
5	T1	All MCs	248	2.0	248	2.0	0.145	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	59.4
Approach			278	2.0	278	2.0	0.145	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.1
West: P24															
11	T1	All MCs	506	2.0	506	2.0	0.266	0.0	LOS A	0.0	0.3	0.01	0.01	0.01	59.9
12	R2	All MCs	4	2.0	4	2.0	0.266	5.8	LOS A	0.0	0.3	0.01	0.01	0.01	57.0
Approach			511	2.0	511	2.0	0.266	0.1	NA	0.0	0.3	0.01	0.01	0.01	59.9
All Vehicles			815	2.0	815	2.0	0.266	0.7	NA	0.2	1.2	0.02	0.06	0.02	59.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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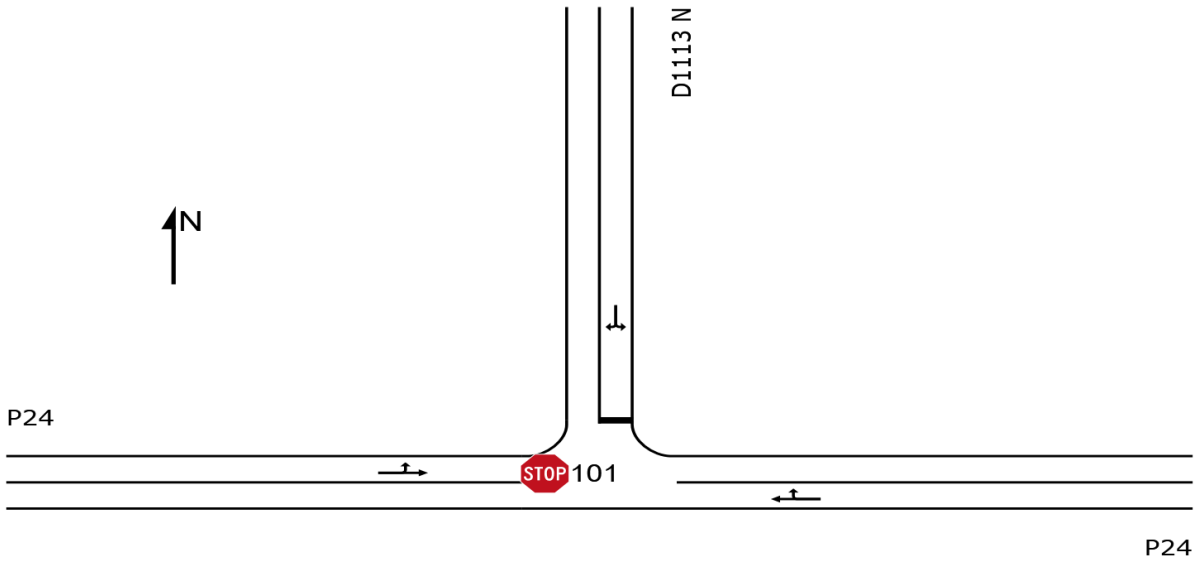
SITE LAYOUT

Site: [101] 2033 Background AM Peak Hour + Total Phase 1 Dev trips (General)

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113 Link
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: Z:\ZA\Projects\43100xxx\43103108 - VAAL - LAND PREPARATION\43 H&T\43 HT\01-D&D Docs\03-Outputs\01-Reports\01-Traffic Impact Assessment\SIDRA\N1 SDI.FINAL\P24 & D1113 N.sipx

LANE LEVEL OF SERVICE

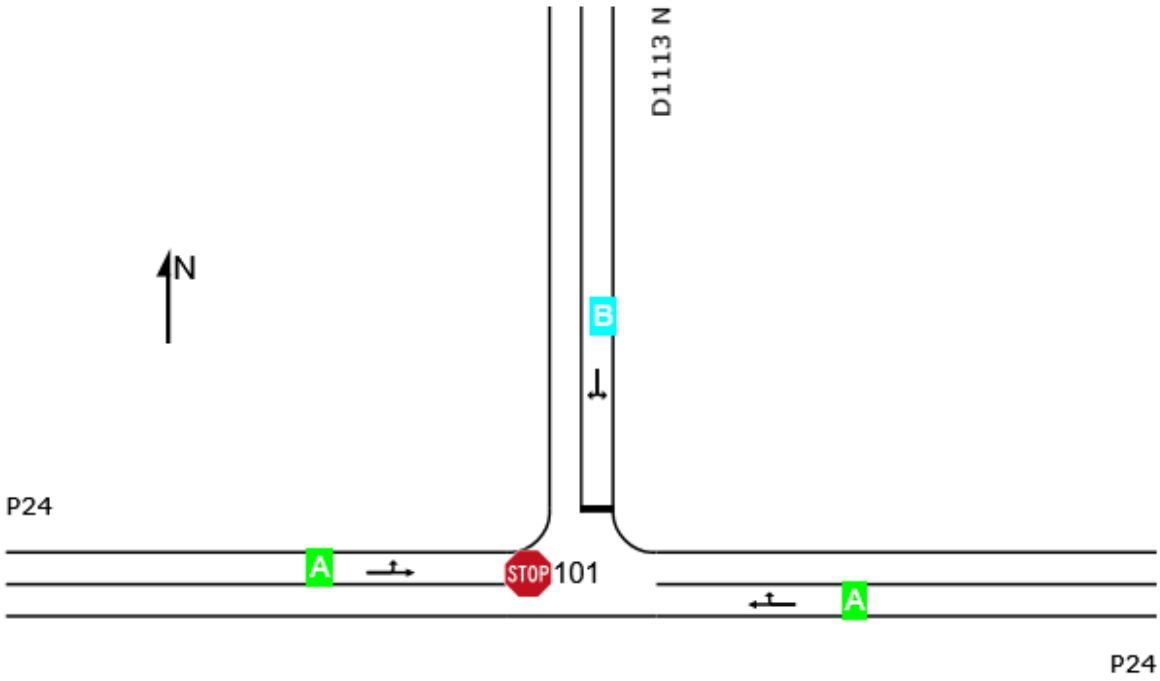
Lane Level of Service

Site: [101] 2033 Background AM Peak Hour + Total Phase 1 Dev trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113 Link
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	East	North	West	
LOS	NA (TWSC)	B	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [101] 2033 Background AM Peak Hour + Total Phase 1

Dev trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113 Link
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
East: P24															
5	T1	All MCs	426	2.0	426	2.0	0.241	0.2	LOS A	0.2	1.6	0.07	0.08	0.07	59.5
6	R2	All MCs	21	2.0	21	2.0	0.241	7.7	LOS A	0.2	1.6	0.07	0.08	0.07	56.6
Approach			447	2.0	447	2.0	0.241	0.5	NA	0.2	1.6	0.07	0.08	0.07	59.3
North: D1113 N															
7	L2	All MCs	32	2.0	32	2.0	0.041	10.5	LOS B	0.1	1.0	0.49	0.90	0.49	49.9
9	R2	All MCs	1	2.0	1	2.0	0.041	15.2	LOS C	0.1	1.0	0.49	0.90	0.49	49.7
Approach			33	2.0	33	2.0	0.041	10.6	LOS B	0.1	1.0	0.49	0.90	0.49	49.9
West: P24															
10	L2	All MCs	2	2.0	2	2.0	0.244	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.3
11	T1	All MCs	468	2.0	468	2.0	0.244	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			471	2.0	471	2.0	0.244	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles			951	2.0	951	2.0	0.244	0.7	NA	0.2	1.6	0.05	0.07	0.05	59.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

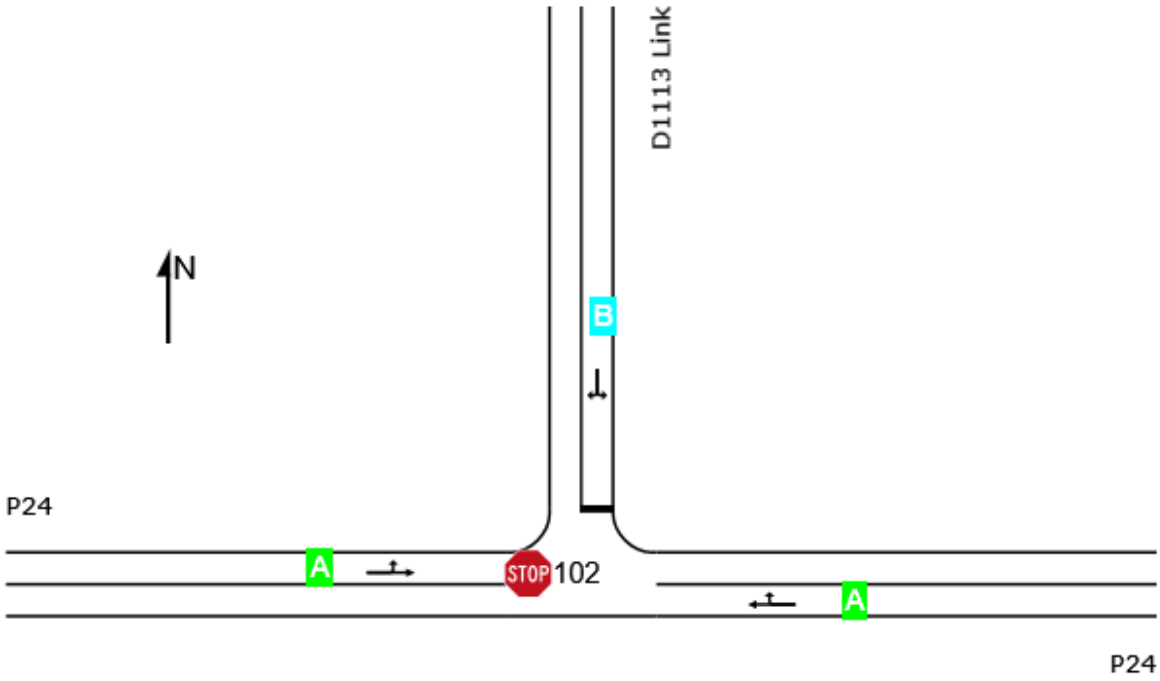
Lane Level of Service

Site: [102] 2033 Background PM Peak Hour + Total Phase 1 Dev trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113 Link
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	East	North	West	
LOS	NA (TWSC)	B	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [102] 2033 Background PM Peak Hour + Total Phase 1

Dev trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: R54 & D1113 Link
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
East: P24															
5	T1	All MCs	277	2.0	277	2.0	0.176	0.5	LOS A	0.3	2.5	0.15	0.18	0.15	58.8
6	R2	All MCs	32	2.0	32	2.0	0.176	8.0	LOS A	0.3	2.5	0.15	0.18	0.15	56.0
Approach			308	2.0	308	2.0	0.176	1.2	NA	0.3	2.5	0.15	0.18	0.15	58.5
North: D1113 Link															
7	L2	All MCs	26	2.0	26	2.0	0.040	11.0	LOS B	0.1	1.0	0.52	0.91	0.52	49.6
9	R2	All MCs	2	2.0	2	2.0	0.040	14.2	LOS B	0.1	1.0	0.52	0.91	0.52	49.3
Approach			28	2.0	28	2.0	0.040	11.2	LOS B	0.1	1.0	0.52	0.91	0.52	49.6
West: P24															
10	L2	All MCs	1	2.0	1	2.0	0.276	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.3
11	T1	All MCs	531	2.0	531	2.0	0.276	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			532	2.0	532	2.0	0.276	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles			868	2.0	868	2.0	0.276	0.9	NA	0.3	2.5	0.07	0.09	0.07	59.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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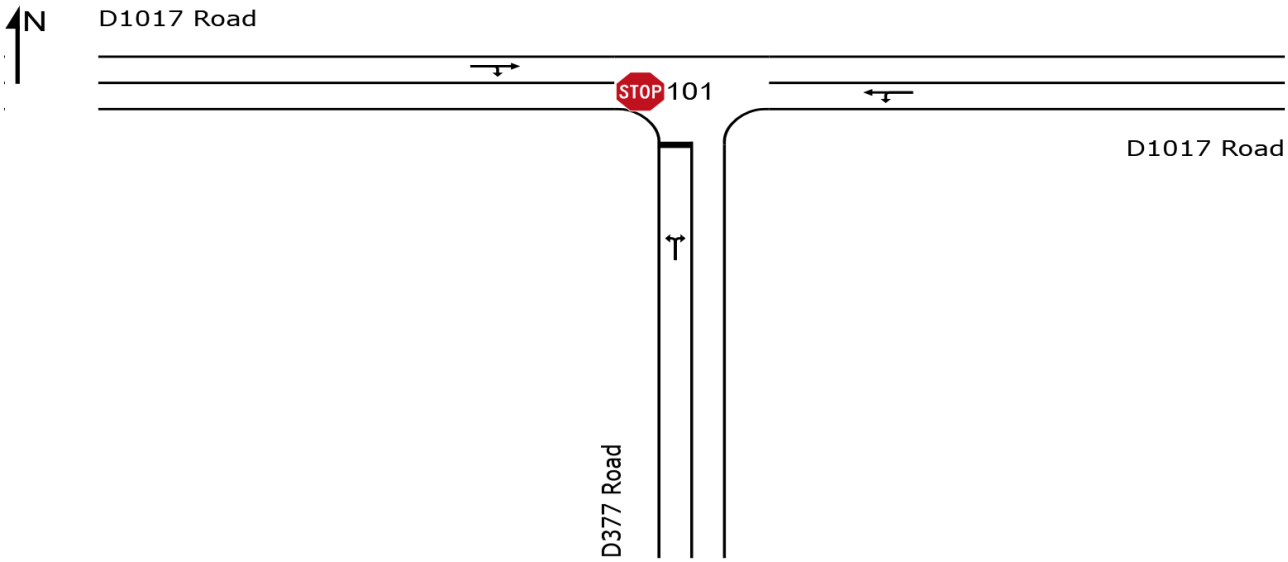
SITE LAYOUT

Site: [101] 2033 Background AM Peak Hour + Total Phase 1 Dev Trips (General)

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: D1017 Road & D377 Road
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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LANE LEVEL OF SERVICE

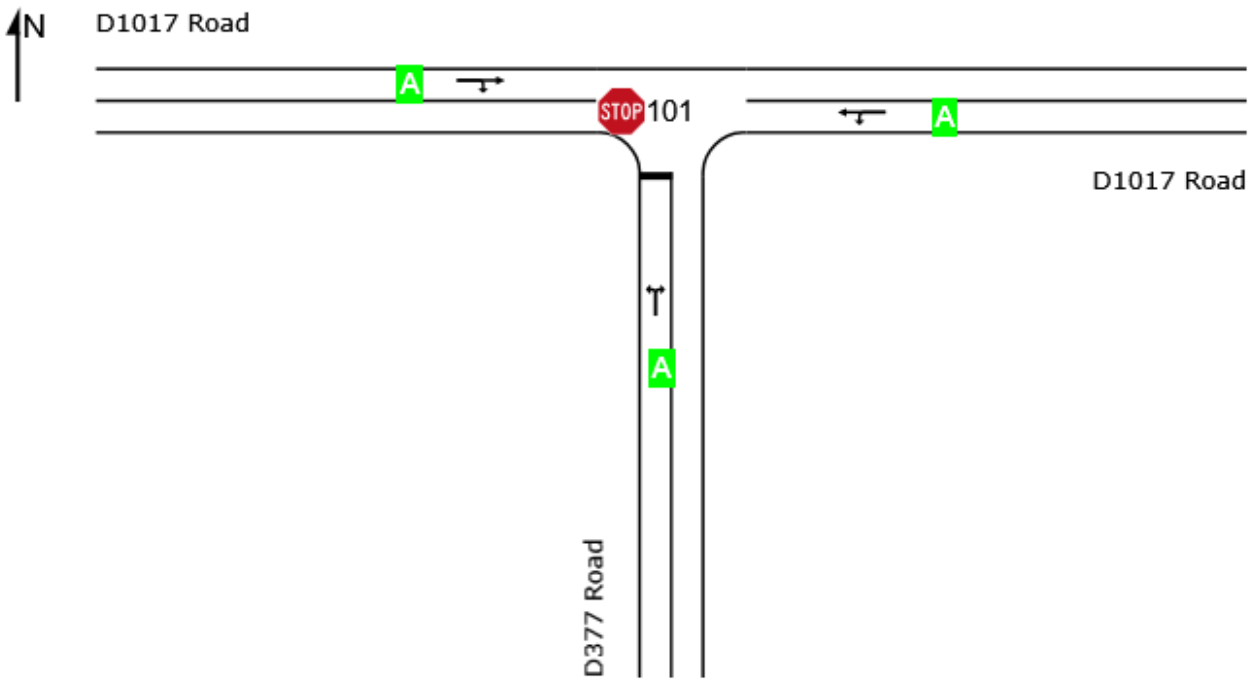
Lane Level of Service

Site: [101] 2033 Background AM Peak Hour + Total Phase 1 Dev Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: D1017 Road & D377 Road
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	East	West	
LOS	A	NA (TWSC)	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [101] 2033 Background AM Peak Hour + Total Phase 1
Dev Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: D1017 Road & D377 Road
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D377 Road															
1	L2	All MCs	24	2.0	24	2.0	0.018	8.2	LOS A	0.1	0.5	0.09	0.93	0.09	51.0
3	R2	All MCs	1	2.0	1	2.0	0.018	7.8	LOS A	0.1	0.5	0.09	0.93	0.09	50.7
Approach			25	2.0	25	2.0	0.018	8.2	LOS A	0.1	0.5	0.09	0.93	0.09	51.0
East: D1017 Road															
4	L2	All MCs	1	2.0	1	2.0	0.014	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.2
5	T1	All MCs	25	2.0	25	2.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			26	2.0	26	2.0	0.014	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
West: D1017 Road															
11	T1	All MCs	17	2.0	17	2.0	0.025	0.1	LOS A	0.1	0.8	0.09	0.37	0.09	56.5
12	R2	All MCs	28	2.0	28	2.0	0.025	5.5	LOS A	0.1	0.8	0.09	0.37	0.09	53.9
Approach			45	2.0	45	2.0	0.025	3.5	NA	0.1	0.8	0.09	0.37	0.09	54.8
All Vehicles			97	2.0	97	2.0	0.025	3.8	NA	0.1	0.8	0.06	0.42	0.06	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

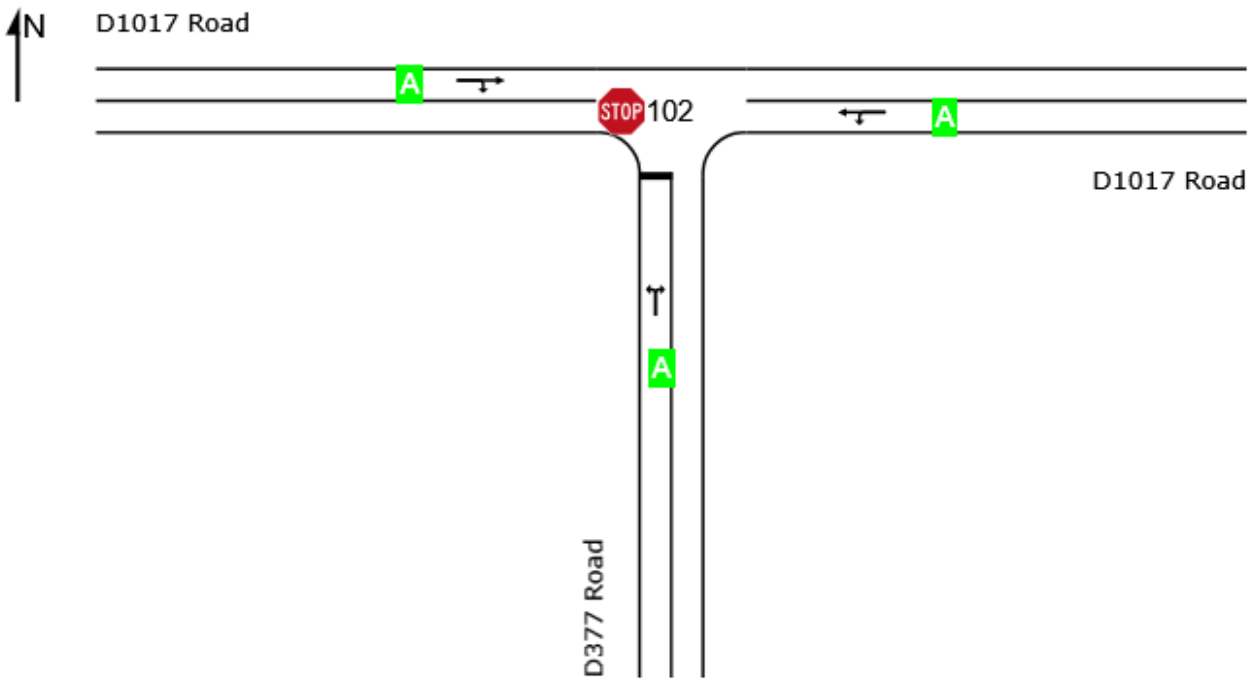
Lane Level of Service

Site: [102] 2033 Background PM Peak Hour + Total Phase 1 Dev Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: D1017 Road & D377 Road
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	East	West	
LOS	A	NA (TWSC)	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [102] 2033 Background PM Peak Hour + Total Phase 1
Dev Trips (General)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour + Total Phase 1 Development Trips (Opt 2 Interchange)
Intersection: D1017 Road & D377 Road
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D377 Road															
1	L2	All MCs	33	2.0	33	2.0	0.025	8.2	LOS A	0.1	0.7	0.09	0.93	0.09	51.0
3	R2	All MCs	2	2.0	2	2.0	0.025	7.9	LOS A	0.1	0.7	0.09	0.93	0.09	50.8
Approach			35	2.0	35	2.0	0.025	8.2	LOS A	0.1	0.7	0.09	0.93	0.09	51.0
East: D1017 Road															
4	L2	All MCs	3	2.0	3	2.0	0.015	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	56.8
5	T1	All MCs	25	2.0	25	2.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.4
Approach			28	2.0	28	2.0	0.015	0.6	NA	0.0	0.0	0.00	0.07	0.00	59.1
West: D1017 Road															
11	T1	All MCs	28	2.0	28	2.0	0.031	0.1	LOS A	0.1	0.9	0.08	0.30	0.08	57.1
12	R2	All MCs	28	2.0	28	2.0	0.031	5.5	LOS A	0.1	0.9	0.08	0.30	0.08	54.5
Approach			57	2.0	57	2.0	0.031	2.8	NA	0.1	0.9	0.08	0.30	0.08	55.8
All Vehicles			120	2.0	120	2.0	0.031	3.8	NA	0.1	0.9	0.07	0.43	0.07	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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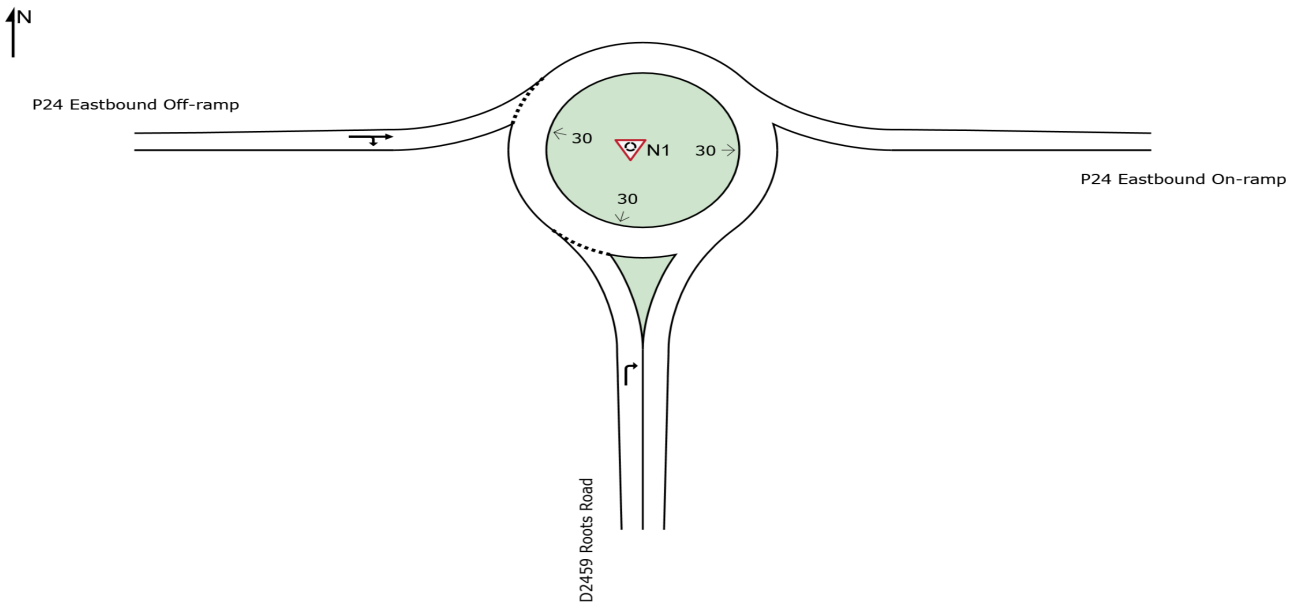
SITE LAYOUT

Site: [N1] R54 & D2459 (Roots Road) - North Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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LANE LEVEL OF SERVICE

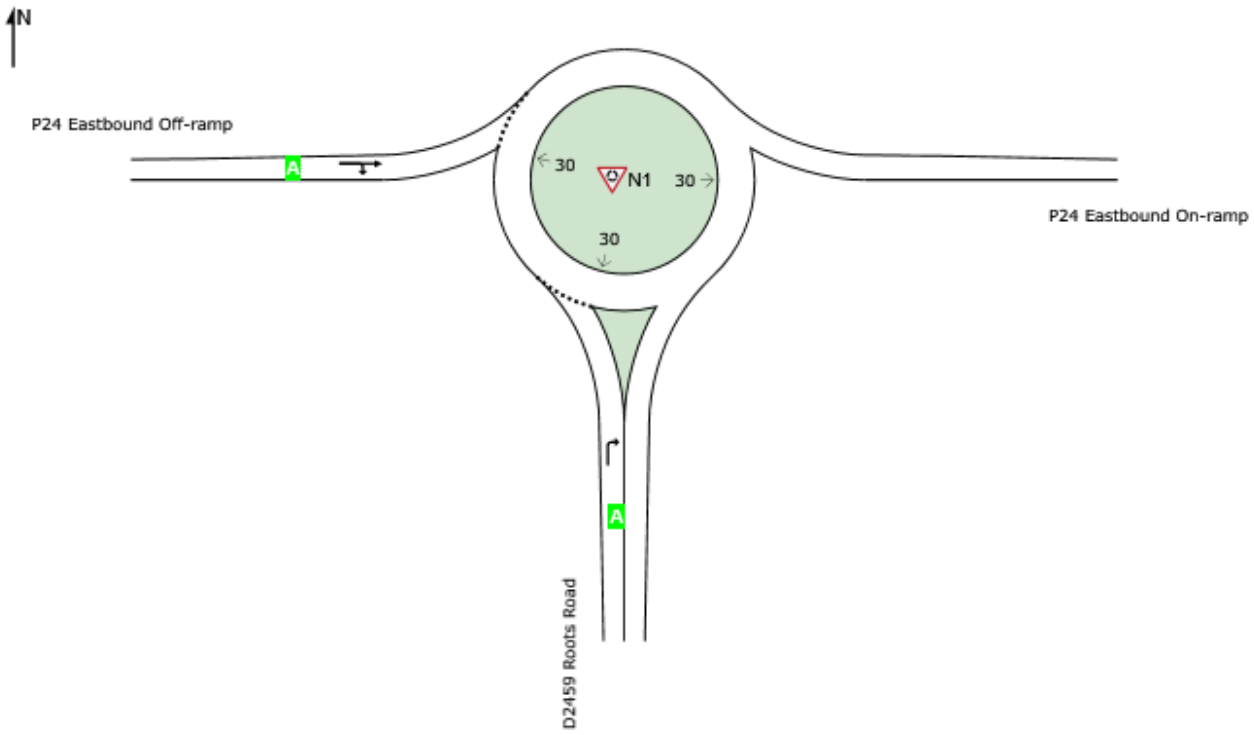
Lane Level of Service

Site: [N1] R54 & D2459 (Roots Road) - North Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	South	West	
LOS	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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MOVEMENT SUMMARY

Site: [N1] R54 & D2459 (Roots Road) - North Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 Roots Road															
3	R2	All MCs	16	2.0	16	2.0	0.009	9.1	LOS A	0.0	0.0	0.00	0.65	0.00	51.0
Approach			16	2.0	16	2.0	0.009	9.1	LOS A	0.0	0.0	0.00	0.65	0.00	51.0
West: P24 Eastbound Off-ramp															
11	T1	All MCs	1	2.0	1	2.0	0.275	3.2	LOS A	1.6	11.2	0.09	0.61	0.09	51.7
12	R2	All MCs	448	2.0	448	2.0	0.275	9.1	LOS A	1.6	11.2	0.09	0.61	0.09	50.7
Approach			449	2.0	449	2.0	0.275	9.1	LOS A	1.6	11.2	0.09	0.61	0.09	50.7
All Vehicles			465	2.0	465	2.0	0.275	9.1	LOS A	1.6	11.2	0.09	0.61	0.09	50.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

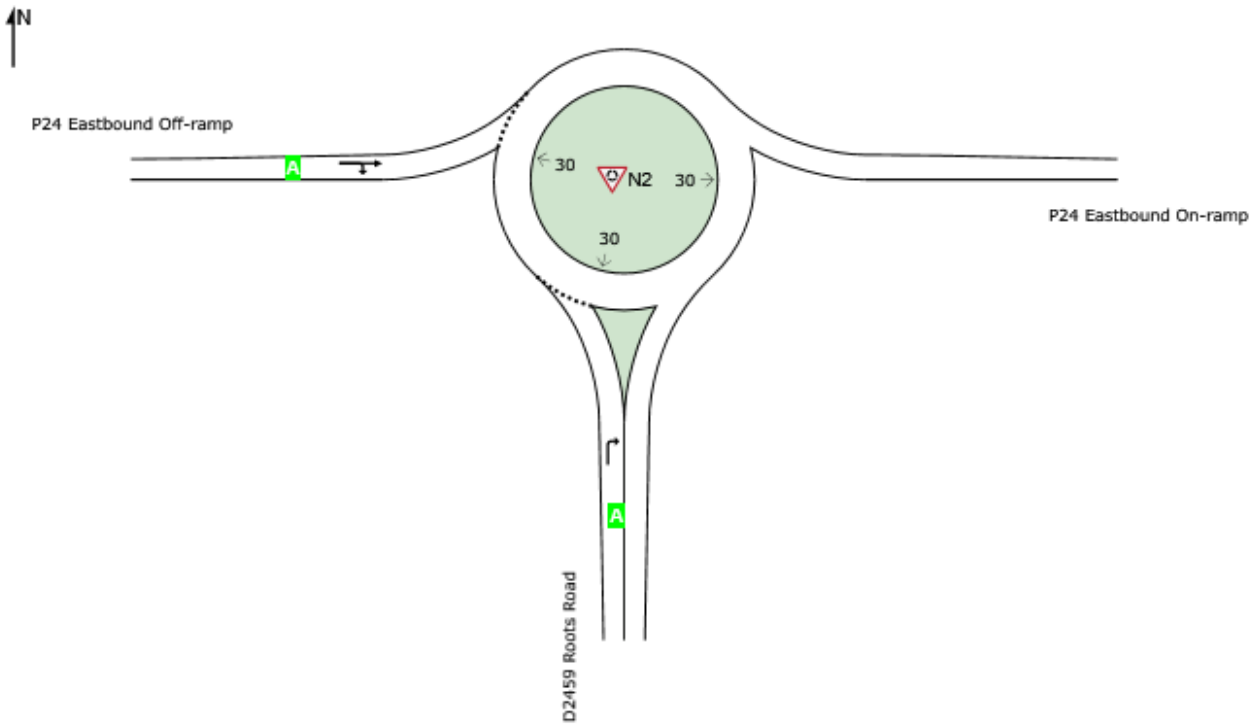
Lane Level of Service

Site: [N2] R54 & D2459 (Roots Road) - North Terminal_2033 Background PM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	South	West	
LOS	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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MOVEMENT SUMMARY

Site: [N2] R54 & D2459 (Roots Road) - North Terminal_2033 Background PM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 Roots Road															
3	R2	All MCs	18	2.0	18	2.0	0.010	9.1	LOS A	0.0	0.0	0.00	0.65	0.00	51.0
Approach			18	2.0	18	2.0	0.010	9.1	LOS A	0.0	0.0	0.00	0.65	0.00	51.0
West: P24 Eastbound Off-ramp															
11	T1	All MCs	1	2.0	1	2.0	0.369	3.3	LOS A	2.4	16.9	0.11	0.61	0.11	51.6
12	R2	All MCs	605	2.0	605	2.0	0.369	9.2	LOS A	2.4	16.9	0.11	0.61	0.11	50.7
Approach			606	2.0	606	2.0	0.369	9.1	LOS A	2.4	16.9	0.11	0.61	0.11	50.7
All Vehicles			624	2.0	624	2.0	0.369	9.1	LOS A	2.4	16.9	0.11	0.61	0.11	50.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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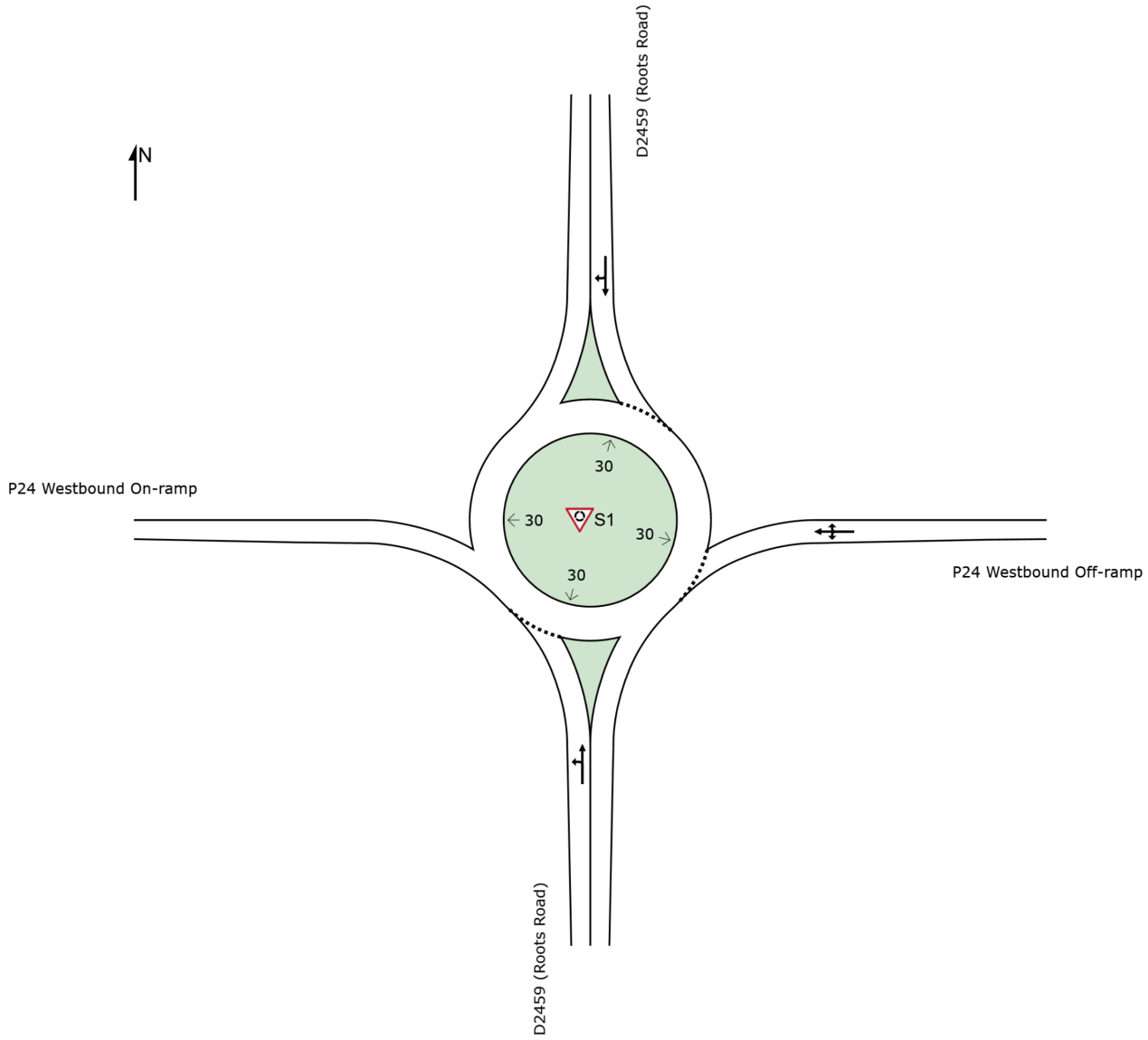
SITE LAYOUT

Site: [S1] R54 & D2459 (Roots Road) - South Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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LANE LEVEL OF SERVICE

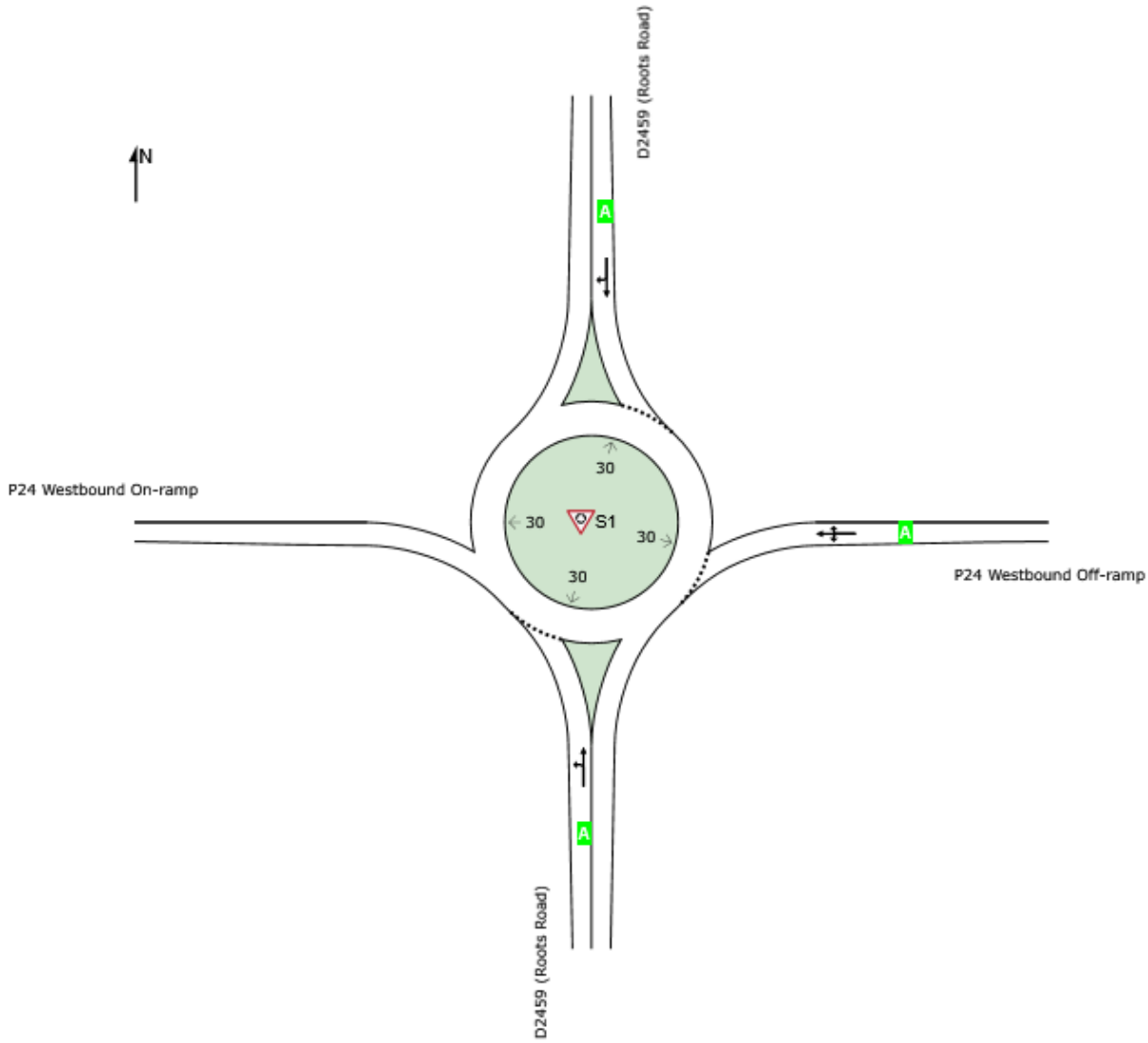
Lane Level of Service

Site: [S1] R54 & D2459 (Roots Road) - South Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	East	North	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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MOVEMENT SUMMARY

Site: [S1] R54 & D2459 (Roots Road) - South Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 (Roots Road)															
1	L2	All MCs	604	2.0	604	2.0	0.357	3.4	LOS A	2.6	18.5	0.04	0.42	0.04	55.5
2	T1	All MCs	16	2.0	16	2.0	0.357	3.2	LOS A	2.6	18.5	0.04	0.42	0.04	56.0
Approach			620	2.0	620	2.0	0.357	3.4	LOS A	2.6	18.5	0.04	0.42	0.04	55.5
East: P24 Westbound Off-ramp															
4	L2	All MCs	31	2.0	31	2.0	0.032	5.5	LOS A	0.2	1.1	0.50	0.55	0.50	53.7
5	T1	All MCs	1	2.0	1	2.0	0.032	5.2	LOS A	0.2	1.1	0.50	0.55	0.50	54.2
6	R2	All MCs	1	2.0	1	2.0	0.032	11.1	LOS B	0.2	1.1	0.50	0.55	0.50	53.1
Approach			33	2.0	33	2.0	0.032	5.6	LOS A	0.2	1.1	0.50	0.55	0.50	53.7
North: D2459 (Roots Road)															
8	T1	All MCs	448	2.0	448	2.0	0.257	3.2	LOS A	0.0	0.0	0.00	0.34	0.00	56.4
9	R2	All MCs	1	2.0	1	2.0	0.257	9.1	LOS A	0.0	0.0	0.00	0.34	0.00	55.2
Approach			449	2.0	449	2.0	0.257	3.2	LOS A	0.0	0.0	0.00	0.34	0.00	56.4
All Vehicles			1102	2.0	1102	2.0	0.357	3.4	LOS A	2.6	18.5	0.04	0.39	0.04	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

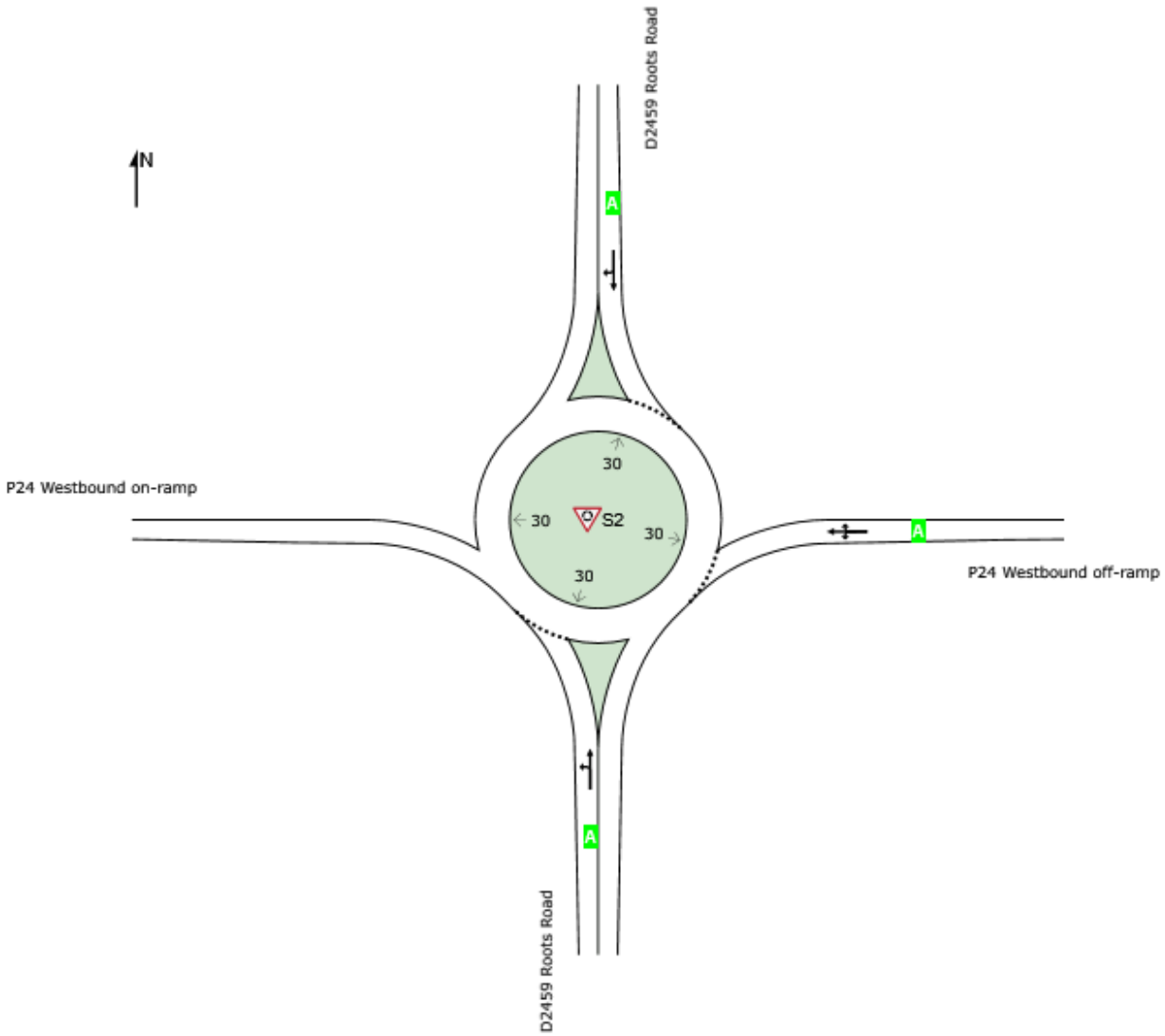
Lane Level of Service

Site: [S2] R54 & D2459 (Roots Road) - South Terminal_2033 Background PM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	East	North	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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MOVEMENT SUMMARY

Site: [S2] R54 & D2459 (Roots Road) - South Terminal_2033 Background PM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV %]	Arrival Flows [Total veh/h	HV %]	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist m]	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 Roots Road															
1	L2	All MCs	508	2.0	508	2.0	0.304	3.4	LOS A	2.1	15.0	0.04	0.42	0.04	55.5
2	T1	All MCs	18	2.0	18	2.0	0.304	3.2	LOS A	2.1	15.0	0.04	0.42	0.04	56.0
Approach			526	2.0	526	2.0	0.304	3.4	LOS A	2.1	15.0	0.04	0.42	0.04	55.5
East: P24 Westbound off-ramp															
4	L2	All MCs	41	2.0	41	2.0	0.047	6.5	LOS A	0.2	1.7	0.58	0.60	0.58	53.0
5	T1	All MCs	1	2.0	1	2.0	0.047	6.3	LOS A	0.2	1.7	0.58	0.60	0.58	53.5
6	R2	All MCs	1	2.0	1	2.0	0.047	12.2	LOS B	0.2	1.7	0.58	0.60	0.58	52.4
Approach			43	2.0	43	2.0	0.047	6.6	LOS A	0.2	1.7	0.58	0.60	0.58	53.0
North: D2459 Roots Road															
8	T1	All MCs	605	2.0	605	2.0	0.346	3.2	LOS A	0.0	0.0	0.00	0.34	0.00	56.4
9	R2	All MCs	1	2.0	1	2.0	0.346	9.1	LOS A	0.0	0.0	0.00	0.34	0.00	55.2
Approach			606	2.0	606	2.0	0.346	3.2	LOS A	0.0	0.0	0.00	0.34	0.00	56.4
All Vehicles			1176	2.0	1176	2.0	0.346	3.4	LOS A	2.1	15.0	0.04	0.39	0.04	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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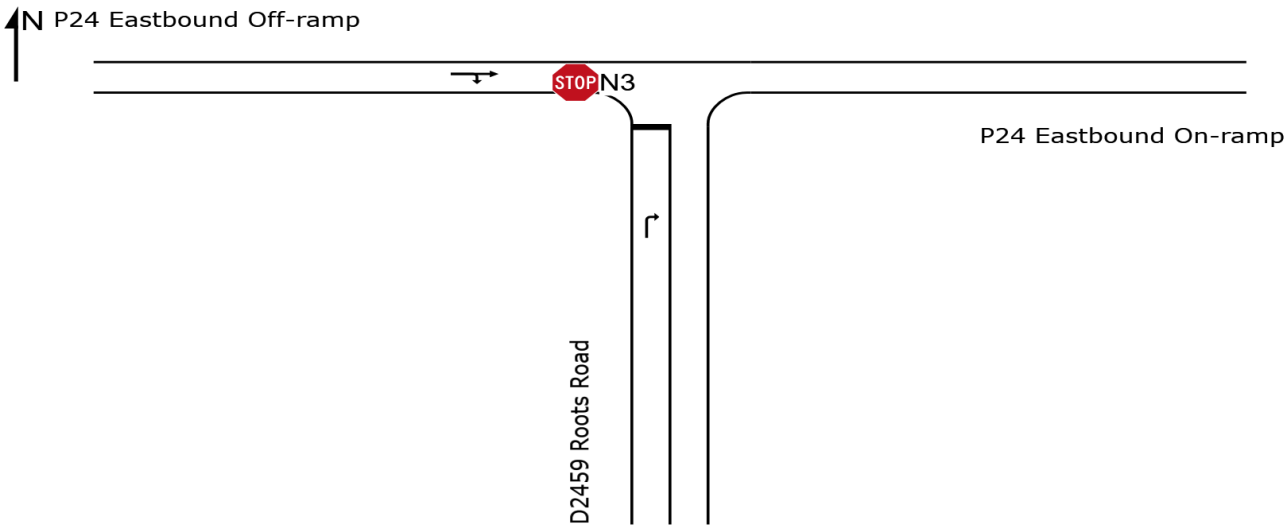
SITE LAYOUT

Site: [N3] R54 & D2459 (Roots Road) - North Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: C:\Users\ZACB02565\OneDrive - WSP O365\Desktop\P24 & D2459 Diamond.sipx

LANE LEVEL OF SERVICE

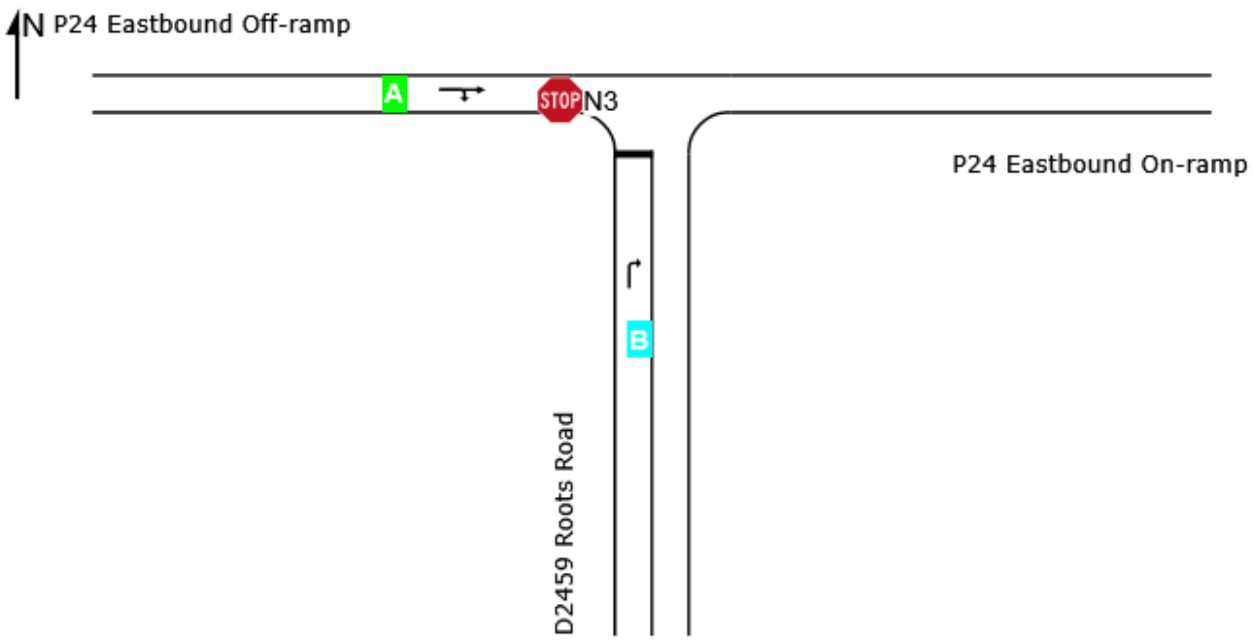
Lane Level of Service

Site: [N3] R54 & D2459 (Roots Road) - North Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	South	West	
LOS	B	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [N3] R54 & D2459 (Roots Road) - North Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 Roots Road															
3	R2	All MCs	16	2.0	16	2.0	0.024	10.3	LOS B	0.1	0.5	0.46	0.91	0.46	49.7
Approach			16	2.0	16	2.0	0.024	10.3	LOS B	0.1	0.5	0.46	0.91	0.46	49.7
West: P24 Eastbound Off-ramp															
11	T1	All MCs	1	2.0	1	2.0	0.237	0.1	LOS A	0.0	0.0	0.00	0.61	0.00	54.9
12	R2	All MCs	448	2.0	448	2.0	0.237	5.6	LOS A	0.0	0.0	0.00	0.61	0.00	52.4
Approach			449	2.0	449	2.0	0.237	5.6	NA	0.0	0.0	0.00	0.61	0.00	52.4
All Vehicles			465	2.0	465	2.0	0.237	5.8	NA	0.1	0.5	0.02	0.62	0.02	52.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

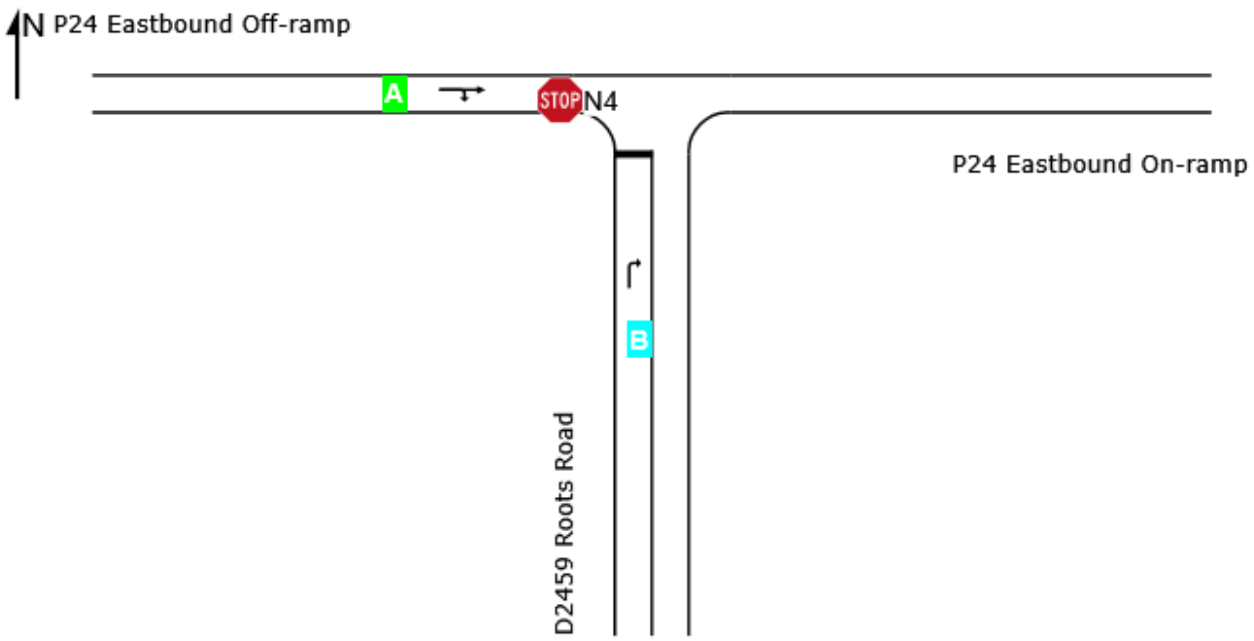
Lane Level of Service

Site: [N4] R54 & D2459 (Roots Road) - North Terminal_2033 Background PM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	South	West	
LOS	B	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [N4] R54 & D2459 (Roots Road) - North Terminal_2033 Background PM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - North Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - North Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 Roots Road															
3	R2	All MCs	18	2.0	18	2.0	0.036	12.1	LOS B	0.1	0.8	0.55	0.96	0.55	48.6
Approach			18	2.0	18	2.0	0.036	12.1	LOS B	0.1	0.8	0.55	0.96	0.55	48.6
West: P24 Eastbound Off-ramp															
11	T1	All MCs	1	2.0	1	2.0	0.319	0.1	LOS A	0.0	0.0	0.00	0.61	0.00	54.8
12	R2	All MCs	605	2.0	605	2.0	0.319	5.6	LOS A	0.0	0.0	0.00	0.61	0.00	52.3
Approach			606	2.0	606	2.0	0.319	5.6	NA	0.0	0.0	0.00	0.61	0.00	52.3
All Vehicles			624	2.0	624	2.0	0.319	5.8	NA	0.1	0.8	0.02	0.62	0.02	52.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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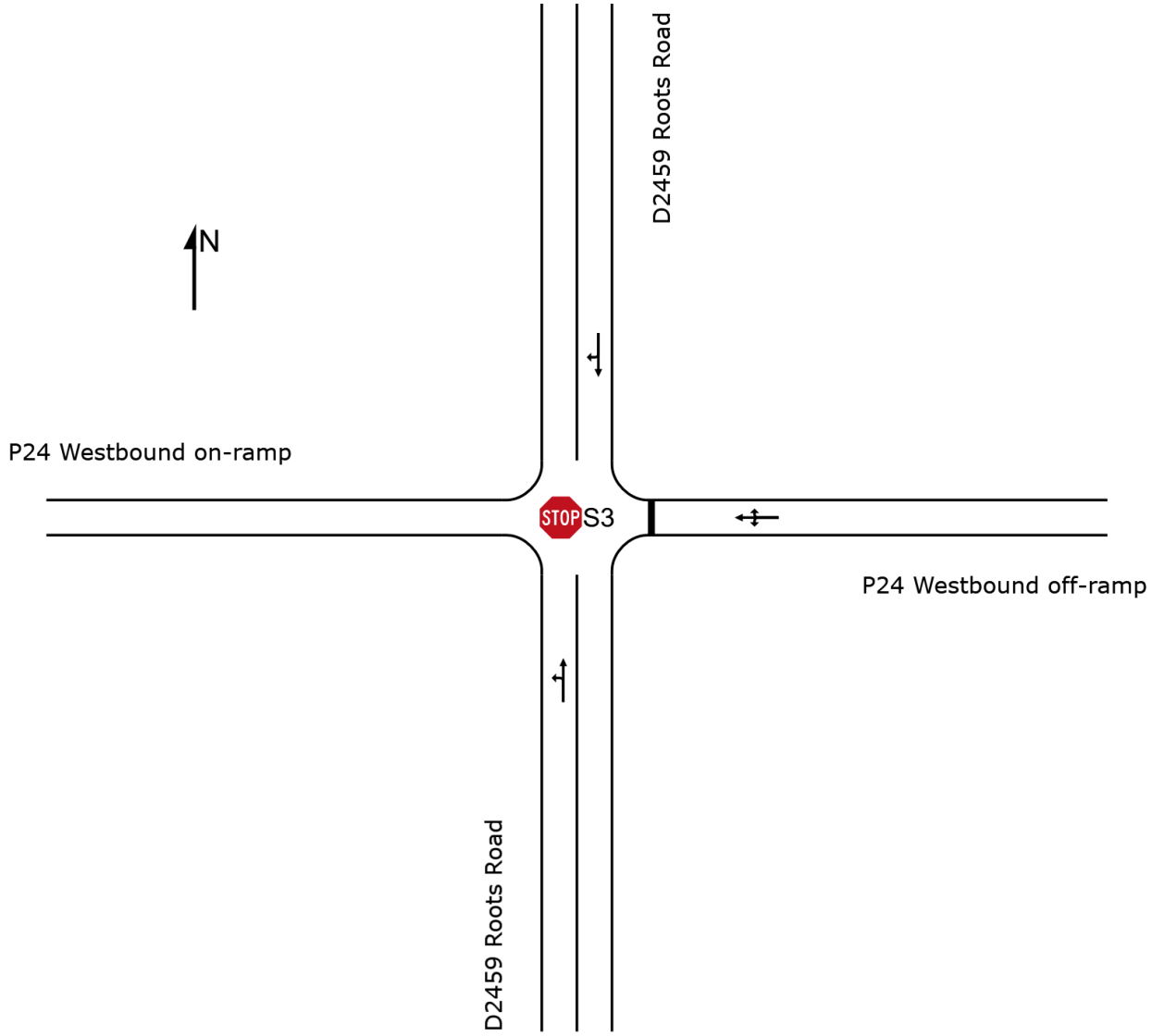
SITE LAYOUT

Site: [S3] R54 & D2459 (Roots Road) - South Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: C:\Users\ZACB02565\OneDrive - WSP O365\Desktop\P24 & D2459 Diamond.sipx

LANE LEVEL OF SERVICE

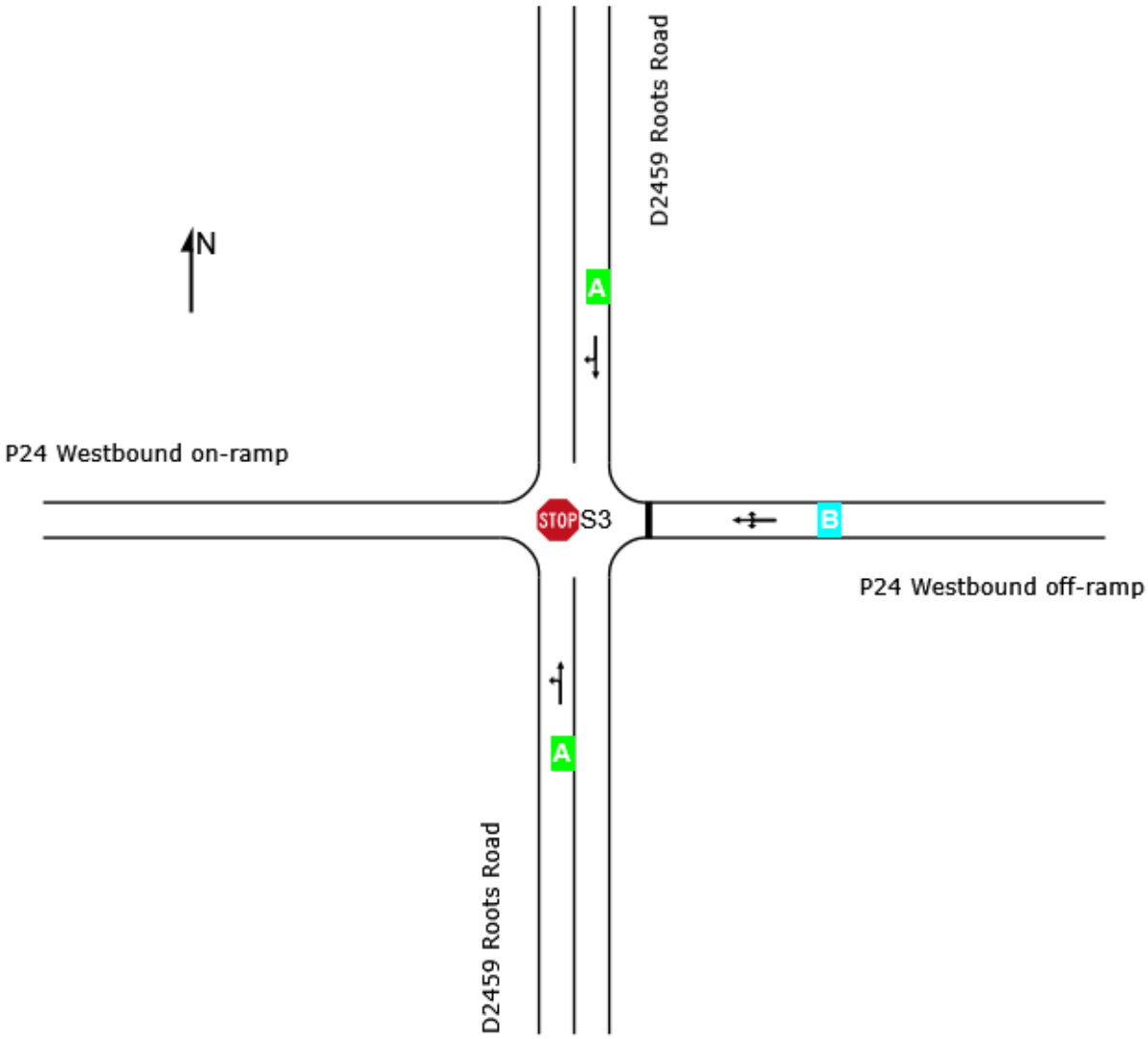
Lane Level of Service

Site: [S3] R54 & D2459 (Roots Road) - South Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	East	North	
LOS	NA (TWSC)	B	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [S3] R54 & D2459 (Roots Road) - South Terminal_2033 Background AM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 Roots Road															
1	L2	All MCs	604	2.0	604	2.0	0.326	5.7	LOS A	0.0	0.0	0.00	0.56	0.00	52.8
2	T1	All MCs	16	2.0	16	2.0	0.326	0.1	LOS A	0.0	0.0	0.00	0.56	0.00	55.0
Approach			620	2.0	620	2.0	0.326	5.5	NA	0.0	0.0	0.00	0.56	0.00	52.8
East: P24 Westbound off-ramp															
4	L2	All MCs	31	2.0	31	2.0	0.041	10.3	LOS B	0.1	1.1	0.49	0.89	0.49	49.9
5	T1	All MCs	1	2.0	1	2.0	0.041	20.2	LOS C	0.1	1.1	0.49	0.89	0.49	49.9
6	R2	All MCs	1	2.0	1	2.0	0.041	11.2	LOS B	0.1	1.1	0.49	0.89	0.49	49.6
Approach			33	2.0	33	2.0	0.041	10.7	LOS B	0.1	1.1	0.49	0.89	0.49	49.9
North: D2459 Roots Road															
8	T1	All MCs	448	2.0	448	2.0	0.226	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	60.0
9	R2	All MCs	1	2.0	1	2.0	0.226	6.0	LOS A	0.0	0.1	0.00	0.00	0.00	57.0
Approach			449	2.0	449	2.0	0.226	0.0	NA	0.0	0.1	0.00	0.00	0.00	60.0
All Vehicles			1102	2.0	1102	2.0	0.326	3.4	NA	0.1	1.1	0.02	0.34	0.02	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

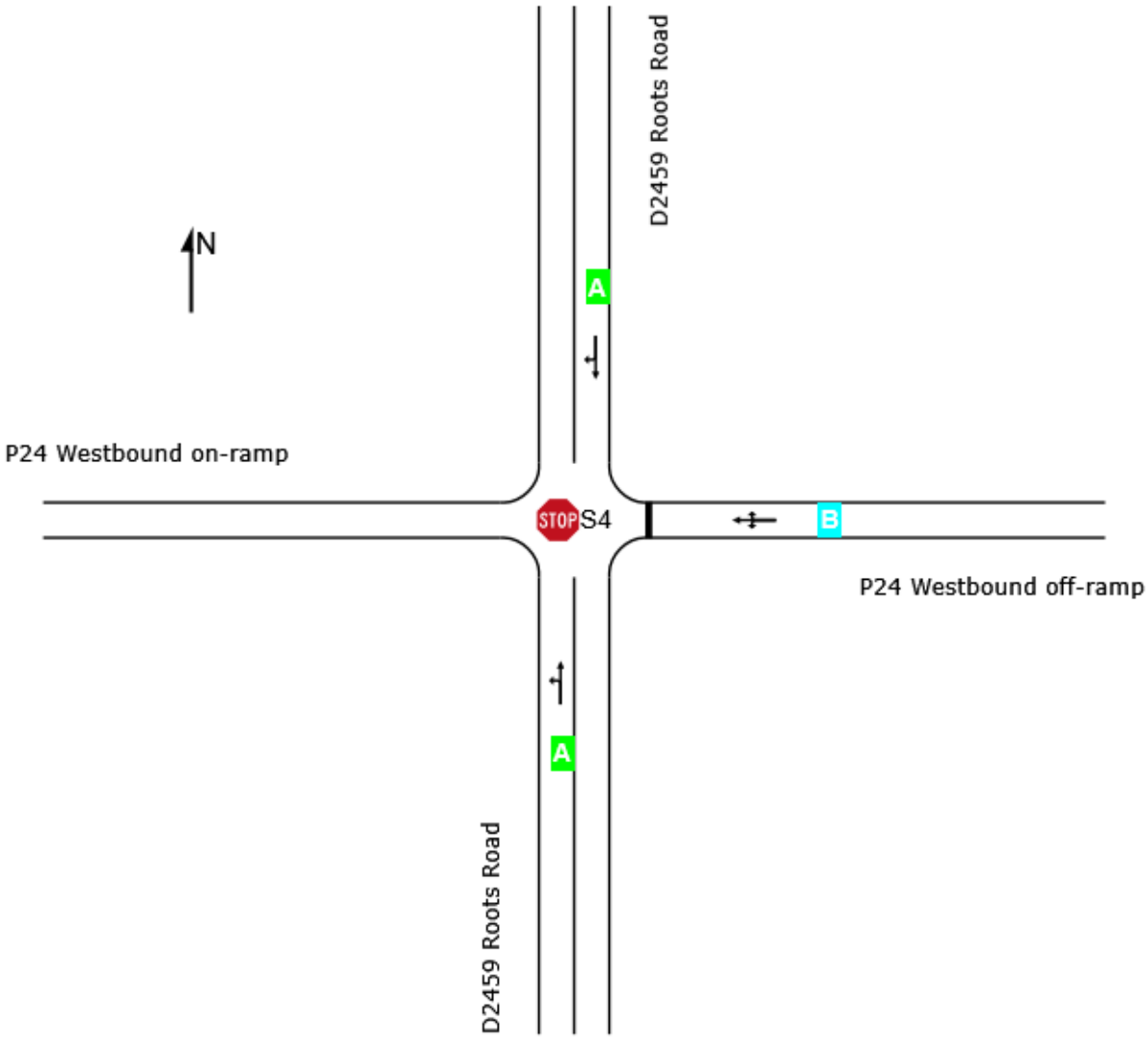
Lane Level of Service

Site: [S4] R54 & D2459 (Roots Road) - South Terminal_2033 Background PM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	East	North	
LOS	NA (TWSC)	B	NA (TWSC)	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [S4] R54 & D2459 (Roots Road) - South Terminal_2033 Background PM Peak Hour Traffic Volumes + Dev Trips (R54 & D2459 (Roots Road) - South Terminal)

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: R54 & D2459 (Roots Road) - South Terminal
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 Roots Road															
1	L2	All MCs	508	2.0	508	2.0	0.277	5.6	LOS A	0.0	0.0	0.00	0.56	0.00	52.9
2	T1	All MCs	18	2.0	18	2.0	0.277	0.1	LOS A	0.0	0.0	0.00	0.56	0.00	55.0
Approach			526	2.0	526	2.0	0.277	5.4	NA	0.0	0.0	0.00	0.56	0.00	52.9
East: P24 Westbound off-ramp															
4	L2	All MCs	41	2.0	41	2.0	0.067	11.8	LOS B	0.2	1.7	0.56	0.95	0.56	49.1
5	T1	All MCs	1	2.0	1	2.0	0.067	21.9	LOS C	0.2	1.7	0.56	0.95	0.56	49.1
6	R2	All MCs	1	2.0	1	2.0	0.067	13.7	LOS B	0.2	1.7	0.56	0.95	0.56	48.8
Approach			43	2.0	43	2.0	0.067	12.1	LOS B	0.2	1.7	0.56	0.95	0.56	49.1
North: D2459 Roots Road															
8	T1	All MCs	605	2.0	605	2.0	0.304	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	60.0
9	R2	All MCs	1	2.0	1	2.0	0.304	5.8	LOS A	0.0	0.1	0.00	0.00	0.00	57.0
Approach			606	2.0	606	2.0	0.304	0.0	NA	0.0	0.1	0.00	0.00	0.00	60.0
All Vehicles			1176	2.0	1176	2.0	0.304	2.9	NA	0.2	1.7	0.02	0.29	0.02	56.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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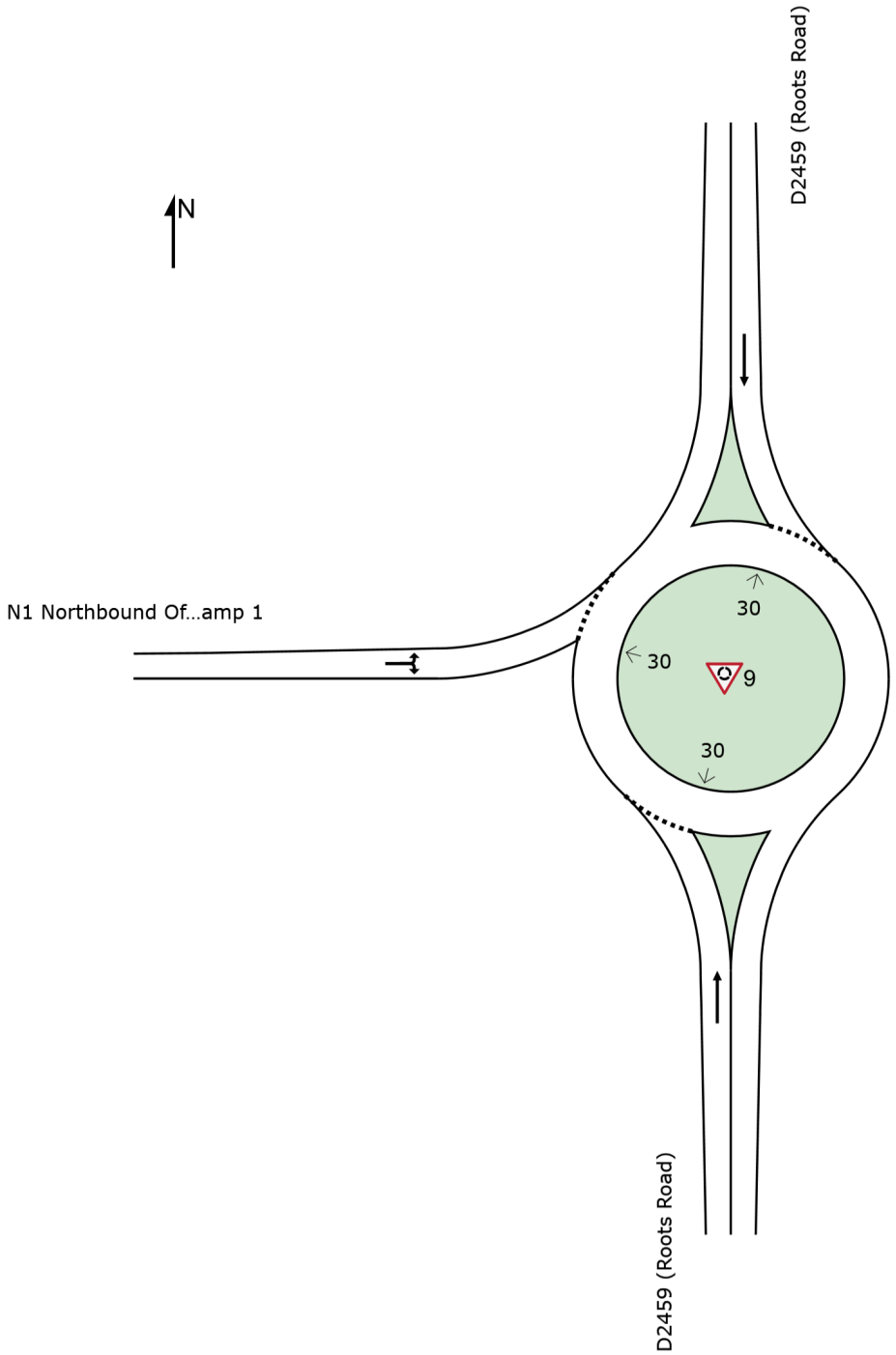
SITE LAYOUT

Site: [9] N1 & D2459 North Terminal (Ramp 1)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1

Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



LANE LEVEL OF SERVICE

Lane Level of Service

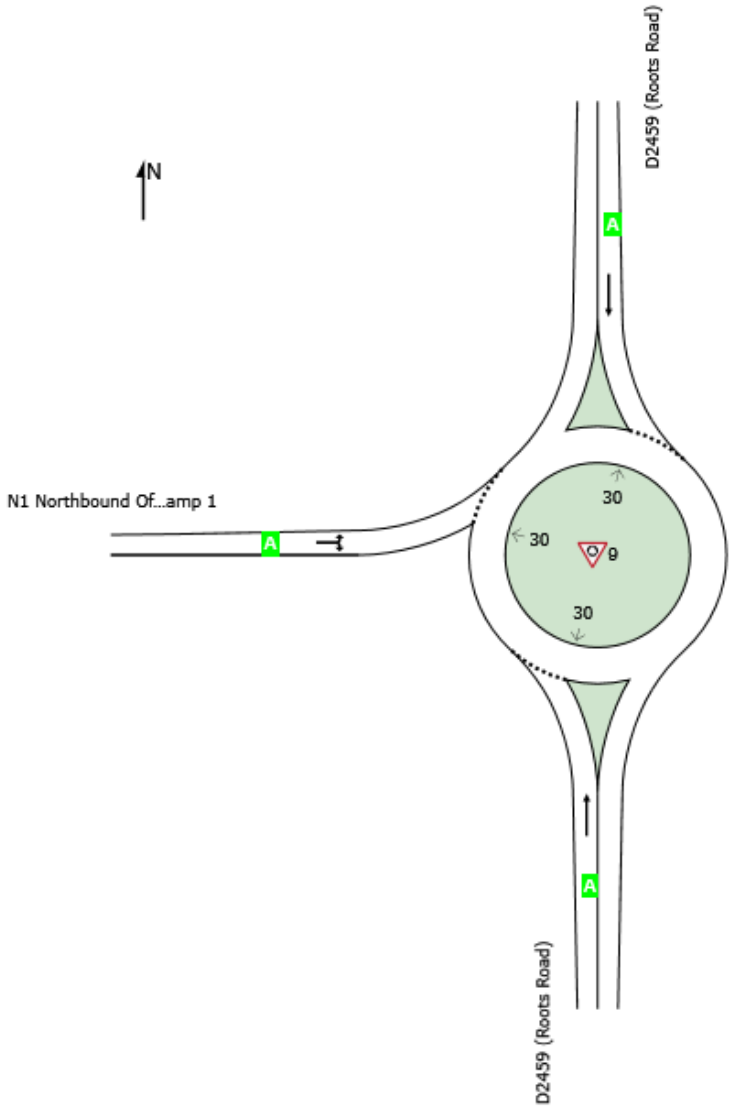
Site: [9] N1 & D2459 North Terminal (Ramp 1)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1

Roundabout
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [9] N1 & D2459 North Terminal (Ramp 1)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1

Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 (Roots Road)															
2	T1	All MCs	34	2.0	34	2.0	0.019	3.2	LOS A	0.0	0.0	0.00	0.34	0.00	56.4
Approach			34	2.0	34	2.0	0.019	3.2	LOS A	0.0	0.0	0.00	0.34	0.00	56.4
North: D2459 (Roots Road)															
8	T1	All MCs	484	2.0	484	2.0	0.283	3.2	LOS A	1.7	12.4	0.05	0.33	0.05	56.1
Approach			484	2.0	484	2.0	0.283	3.2	LOS A	1.7	12.4	0.05	0.33	0.05	56.1
West: N1 Northbound Off-Ramp 1															
10	L2	All MCs	586	2.0	586	2.0	0.375	3.6	LOS A	2.4	17.3	0.16	0.42	0.16	55.0
12	R2	All MCs	5	2.0	5	2.0	0.375	9.3	LOS A	2.4	17.3	0.16	0.42	0.16	54.3
Approach			592	2.0	592	2.0	0.375	3.6	LOS A	2.4	17.3	0.16	0.42	0.16	55.0
All Vehicles			1109	2.0	1109	2.0	0.375	3.4	LOS A	2.4	17.3	0.11	0.38	0.11	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

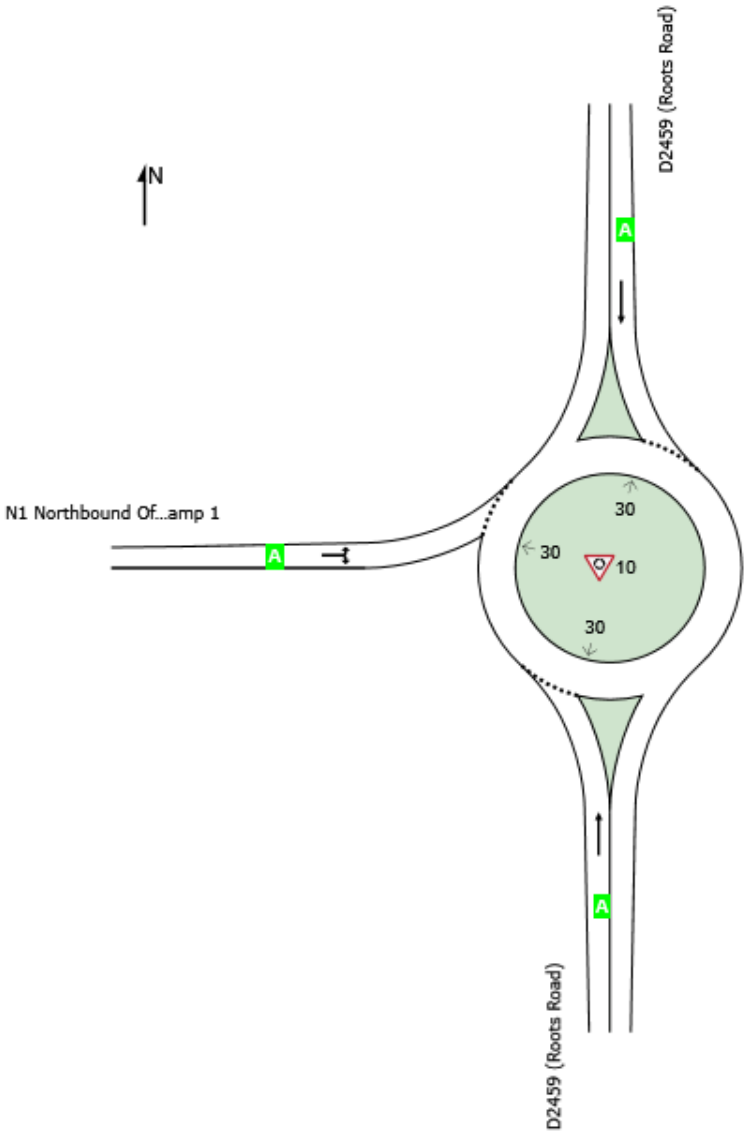
Lane Level of Service

Site: [10] N1 & D2459 North Terminal (Ramp 1)_2033 Background PM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [10] N1 & D2459 North Terminal (Ramp 1)_2033 Background PM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 (Roots Road)															
2	T1	All MCs	29	2.0	29	2.0	0.017	3.2	LOS A	0.0	0.0	0.00	0.34	0.00	56.4
Approach			29	2.0	29	2.0	0.017	3.2	LOS A	0.0	0.0	0.00	0.34	0.00	56.4
North: D2459 (Roots Road)															
8	T1	All MCs	651	2.0	651	2.0	0.378	3.2	LOS A	2.6	18.5	0.05	0.33	0.05	56.1
Approach			651	2.0	651	2.0	0.378	3.2	LOS A	2.6	18.5	0.05	0.33	0.05	56.1
West: N1 Northbound Off-Ramp 1															
10	L2	All MCs	497	2.0	497	2.0	0.317	3.6	LOS A	1.9	13.6	0.14	0.42	0.14	55.1
12	R2	All MCs	5	2.0	5	2.0	0.317	9.2	LOS A	1.9	13.6	0.14	0.42	0.14	54.4
Approach			502	2.0	502	2.0	0.317	3.6	LOS A	1.9	13.6	0.14	0.42	0.14	55.1
All Vehicles			1182	2.0	1182	2.0	0.378	3.4	LOS A	2.6	18.5	0.09	0.37	0.09	55.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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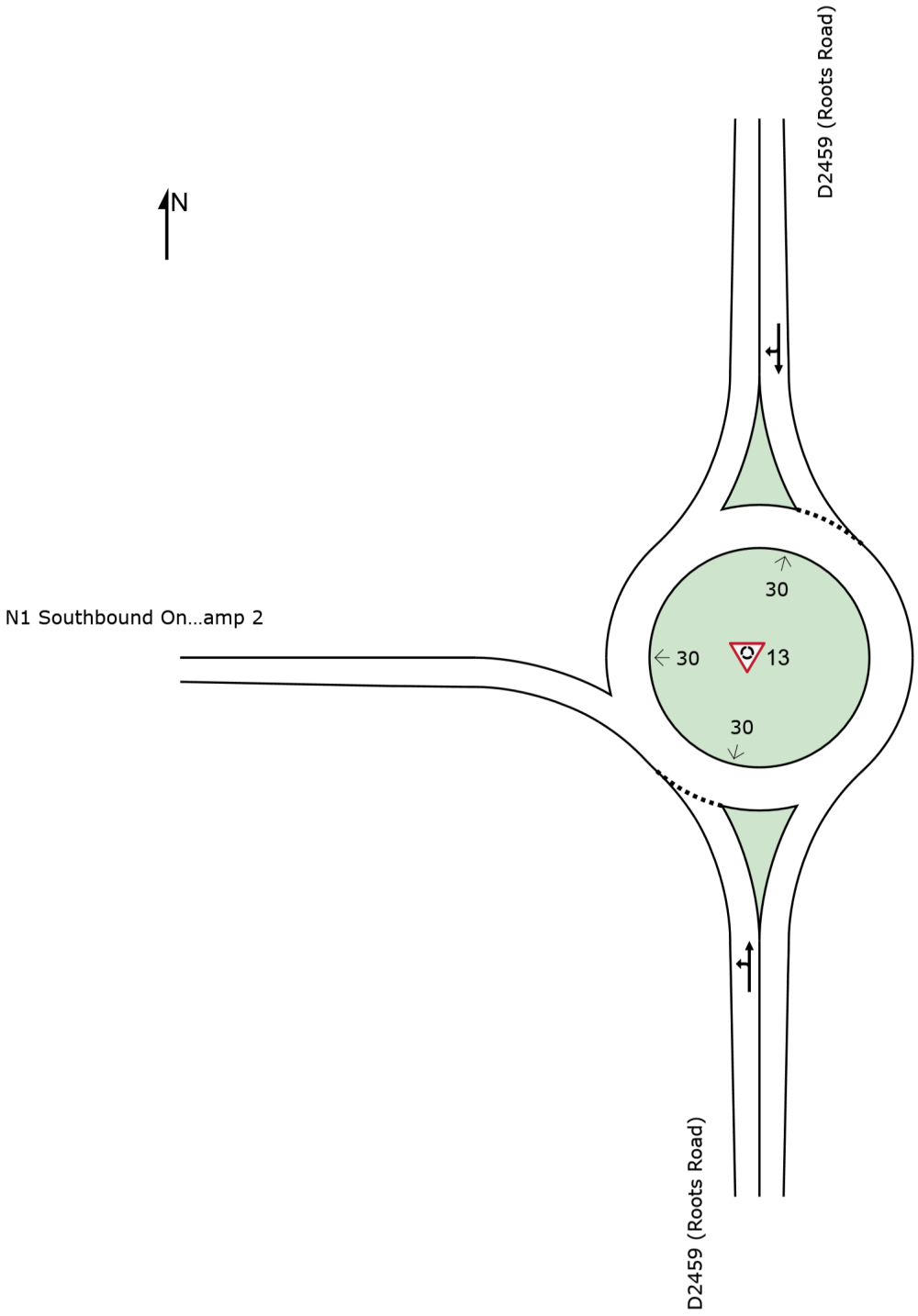
SITE LAYOUT

Site: [13] N1 & D2459 South Terminal (Ramp 2)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



LANE LEVEL OF SERVICE

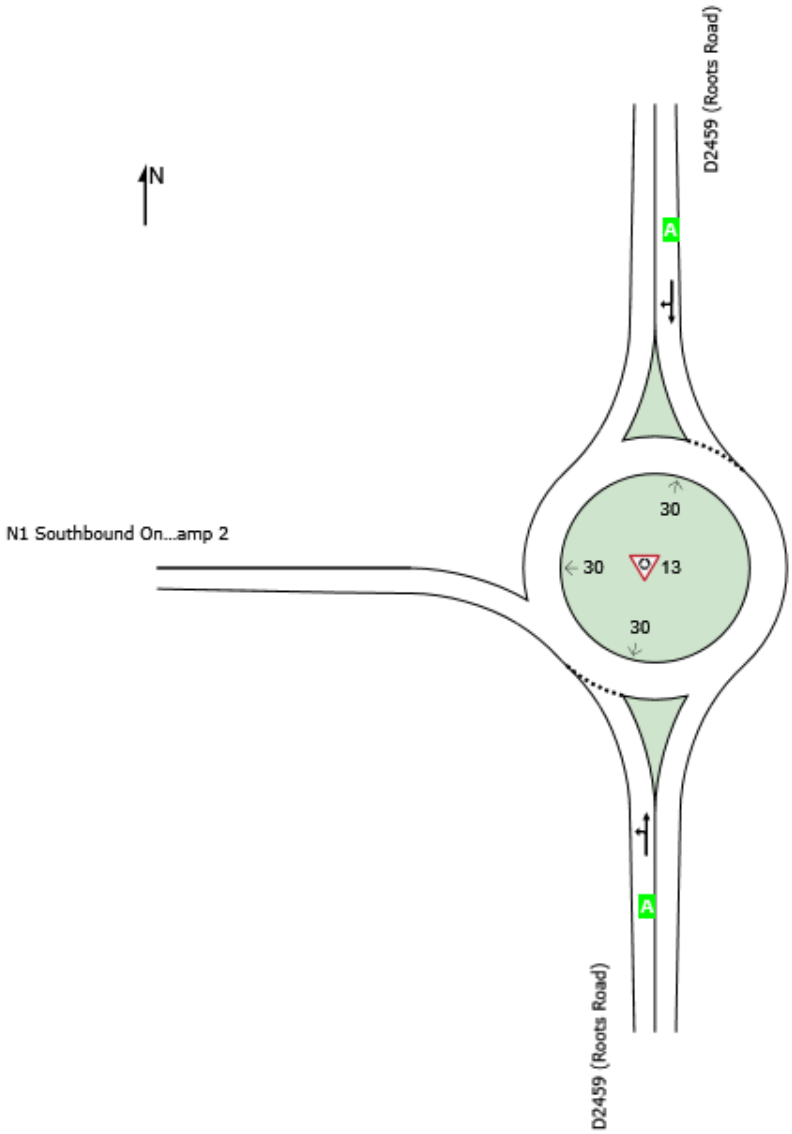
Lane Level of Service

Site: [13] N1 & D2459 South Terminal (Ramp 2)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	South	North	
LOS	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [13] N1 & D2459 South Terminal (Ramp 2)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 (Roots Road)															
1	L2	All MCs	5	2.0	5	2.0	0.039	5.5	LOS A	0.2	1.4	0.50	0.51	0.50	53.5
2	T1	All MCs	34	2.0	34	2.0	0.039	5.3	LOS A	0.2	1.4	0.50	0.51	0.50	53.9
Approach			39	2.0	39	2.0	0.039	5.4	LOS A	0.2	1.4	0.50	0.51	0.50	53.9
North: D2459 (Roots Road)															
8	T1	All MCs	26	2.0	26	2.0	0.279	3.2	LOS A	0.0	0.0	0.00	0.65	0.00	52.2
9	R2	All MCs	462	2.0	462	2.0	0.279	9.1	LOS A	0.0	0.0	0.00	0.65	0.00	51.2
Approach			488	2.0	488	2.0	0.279	8.8	LOS A	0.0	0.0	0.00	0.65	0.00	51.3
All Vehicles			527	2.0	527	2.0	0.279	8.5	LOS A	0.2	1.4	0.04	0.64	0.04	51.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

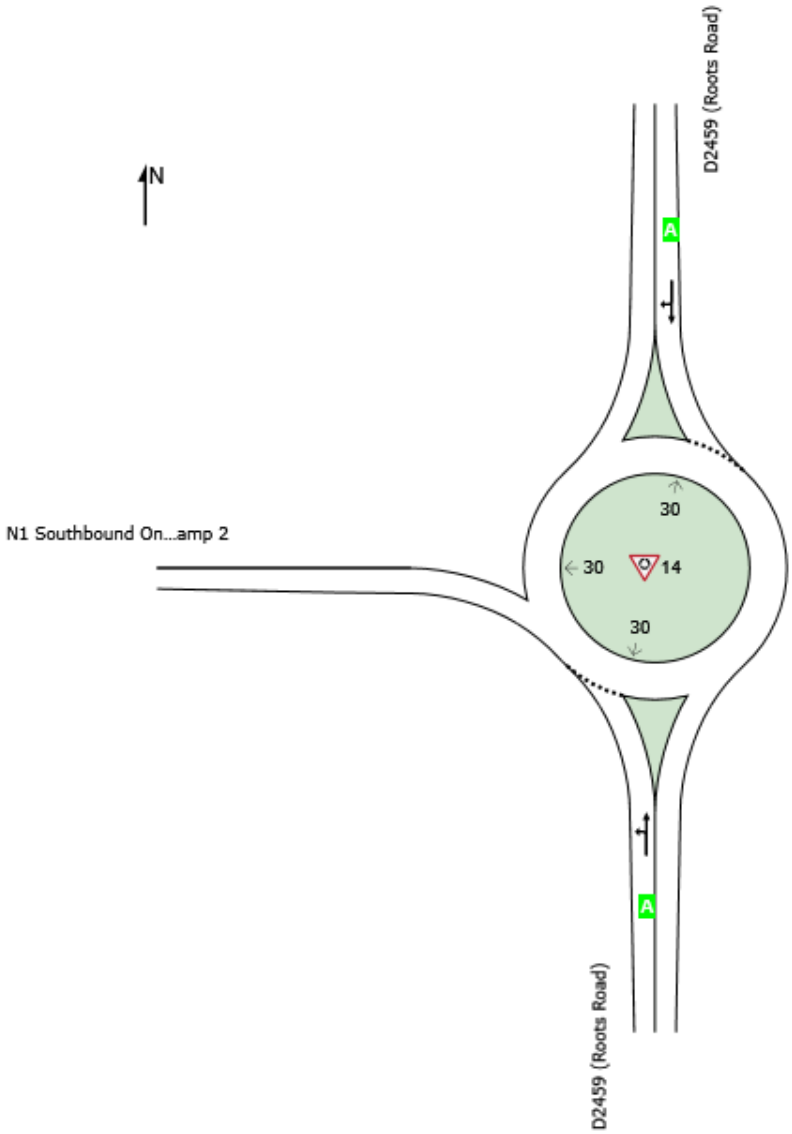
Lane Level of Service

Site: [14] N1 & D2459 South Terminal (Ramp 2)_2033 Background PM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	South	North	
LOS	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [14] N1 & D2459 South Terminal (Ramp 2)_2033 Background PM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 (Roots Road)															
1	L2	All MCs	5	2.0	5	2.0	0.038	6.6	LOS A	0.2	1.4	0.59	0.56	0.59	53.0
2	T1	All MCs	29	2.0	29	2.0	0.038	6.3	LOS A	0.2	1.4	0.59	0.56	0.59	53.5
Approach			35	2.0	35	2.0	0.038	6.4	LOS A	0.2	1.4	0.59	0.56	0.59	53.4
North: D2459 (Roots Road)															
8	T1	All MCs	34	2.0	34	2.0	0.374	3.2	LOS A	0.0	0.0	0.00	0.65	0.00	52.2
9	R2	All MCs	622	2.0	622	2.0	0.374	9.1	LOS A	0.0	0.0	0.00	0.65	0.00	51.2
Approach			656	2.0	656	2.0	0.374	8.8	LOS A	0.0	0.0	0.00	0.65	0.00	51.3
All Vehicles			691	2.0	691	2.0	0.374	8.7	LOS A	0.2	1.4	0.03	0.64	0.03	51.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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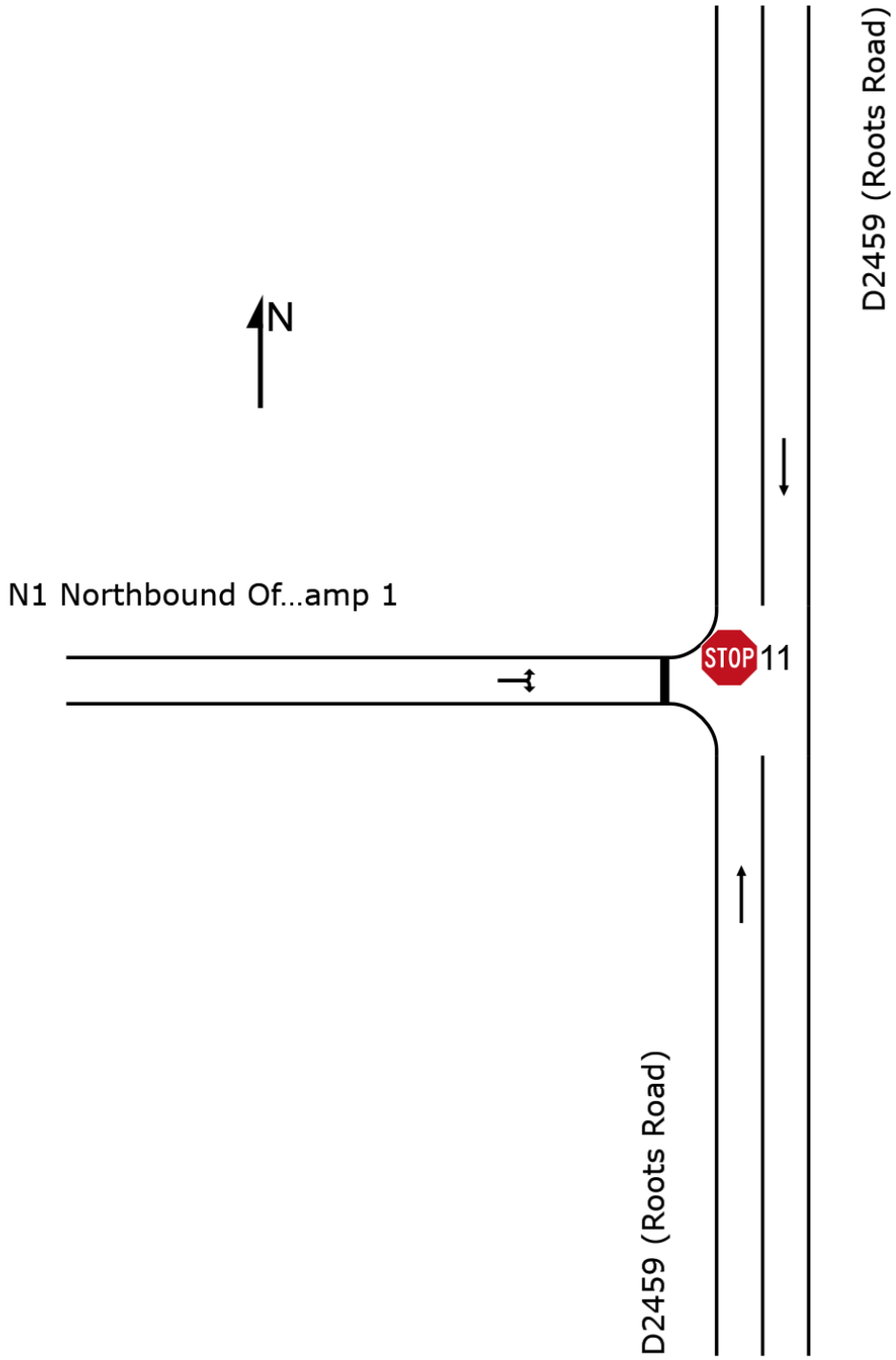
SITE LAYOUT

Site: [11] N1 & D2459 North Terminal (Ramp 1)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



LANE LEVEL OF SERVICE

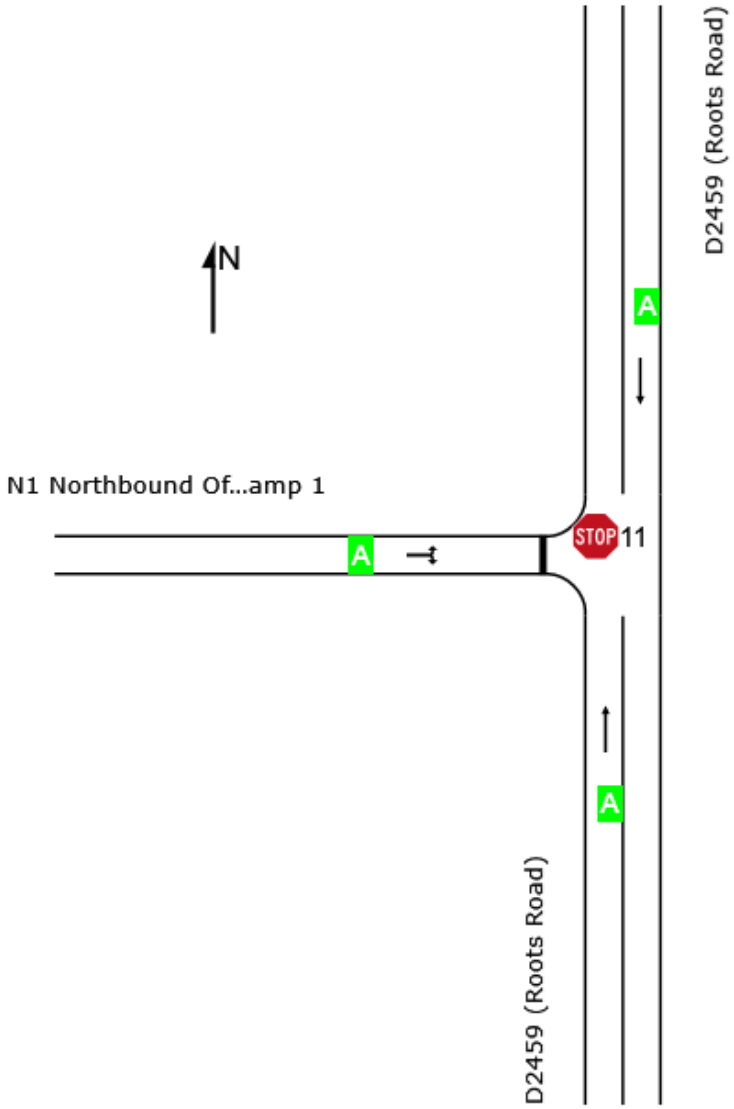
Lane Level of Service

Site: [11] N1 & D2459 North Terminal (Ramp 1)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	North	West	
LOS	NA (TWSC)	NA (TWSC)	A	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [11] N1 & D2459 North Terminal (Ramp 1)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 (Roots Road)															
2	T1	All MCs	34	2.0	34	2.0	0.017	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			34	2.0	34	2.0	0.017	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
North: D2459 (Roots Road)															
8	T1	All MCs	484	2.0	484	2.0	0.243	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			484	2.0	484	2.0	0.243	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: N1 Northbound Off-Ramp 1															
10	L2	All MCs	586	2.0	586	2.0	0.433	8.3	LOS A	2.7	19.1	0.17	0.89	0.17	51.0
12	R2	All MCs	5	2.0	5	2.0	0.433	13.3	LOS B	2.7	19.1	0.17	0.89	0.17	50.7
Approach			592	2.0	592	2.0	0.433	8.4	LOS A	2.7	19.1	0.17	0.89	0.17	51.0
All Vehicles			1109	2.0	1109	2.0	0.433	4.5	NA	2.7	19.1	0.09	0.48	0.09	54.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

Lane Level of Service

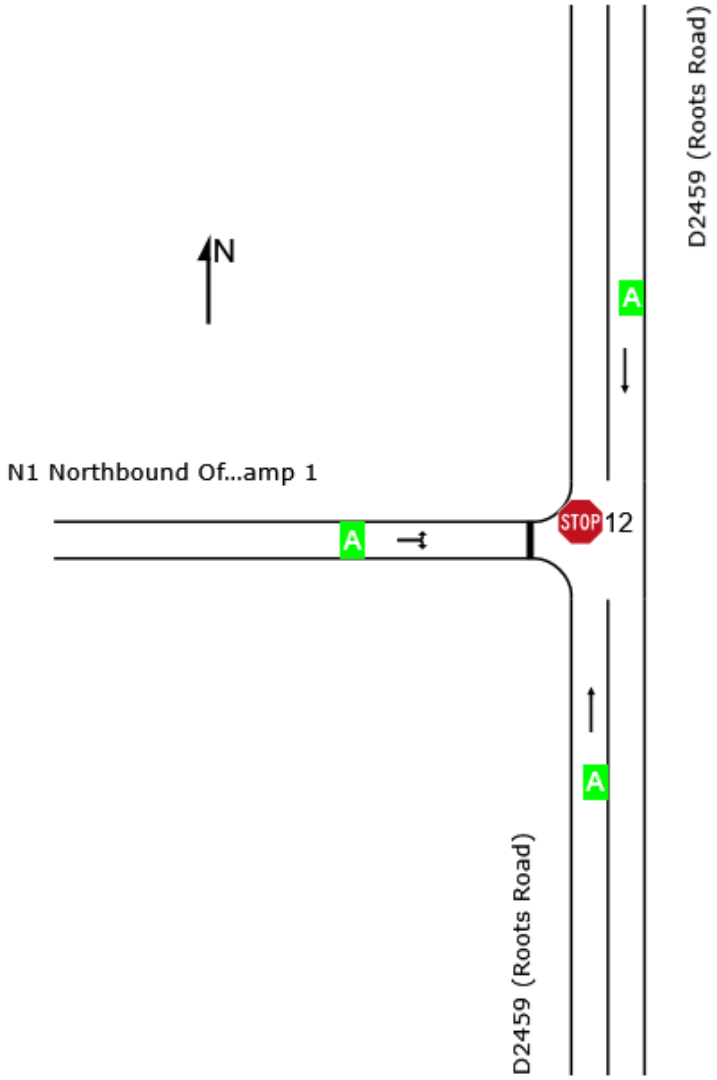
Site: [12] N1 & D2459 North Terminal (Ramp 1)_2033 Background PM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1

Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	South	North	West	
LOS	NA (TWSC)	NA (TWSC)	A	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [12] N1 & D2459 North Terminal (Ramp 1)_2033 Background PM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 North Terminal (Ramp 1))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 North Terminal (Ramp 1

Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 (Roots Road)															
2	T1	All MCs	29	2.0	29	2.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			29	2.0	29	2.0	0.015	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
North: D2459 (Roots Road)															
8	T1	All MCs	651	2.0	651	2.0	0.326	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			651	2.0	651	2.0	0.326	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: N1 Northbound Off-Ramp 1															
10	L2	All MCs	497	2.0	497	2.0	0.369	8.3	LOS A	2.1	14.9	0.14	0.90	0.14	51.0
12	R2	All MCs	5	2.0	5	2.0	0.369	15.8	LOS C	2.1	14.9	0.14	0.90	0.14	50.7
Approach			502	2.0	502	2.0	0.369	8.3	LOS A	2.1	14.9	0.14	0.90	0.14	51.0
All Vehicles			1182	2.0	1182	2.0	0.369	3.6	NA	2.1	14.9	0.06	0.38	0.06	55.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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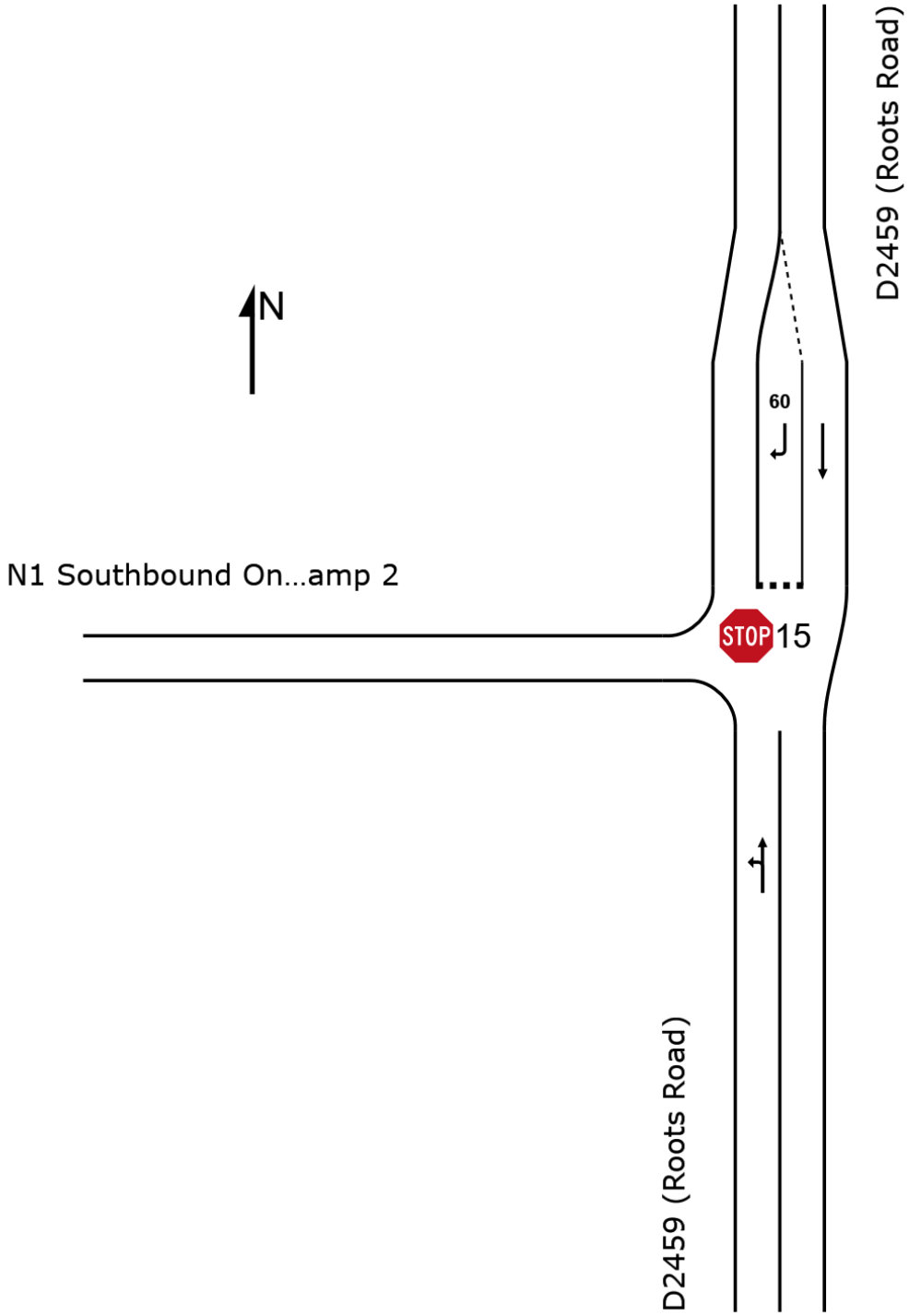
SITE LAYOUT

Site: [15] N1 & D2459 South Terminal (Ramp 2)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



LANE LEVEL OF SERVICE

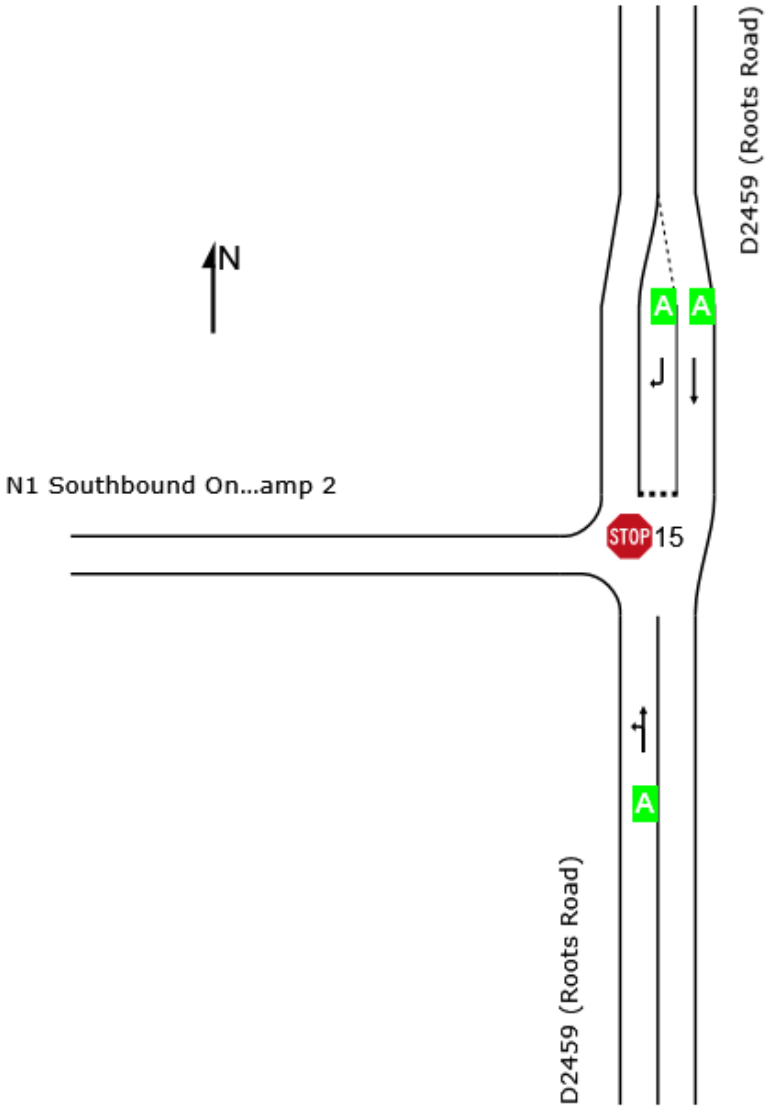
Lane Level of Service

Site: [15] N1 & D2459 South Terminal (Ramp 2)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	South	North	
LOS	NA (TWSC)	A	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [15] N1 & D2459 South Terminal (Ramp 2)_2033 Background AM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 (Roots Road)															
1	L2	All MCs	5	2.0	5	2.0	0.020	5.6	LOS A	0.0	0.0	0.00	0.08	0.00	56.7
2	T1	All MCs	34	2.0	34	2.0	0.020	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	59.3
Approach			39	2.0	39	2.0	0.020	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.9
North: D2459 (Roots Road)															
8	T1	All MCs	26	2.0	26	2.0	0.013	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.3
9	R2	All MCs	462	2.0	462	2.0	0.389	5.7	LOS A	1.9	13.3	0.15	0.57	0.15	52.1
Approach			488	2.0	488	2.0	0.389	5.6	LOS A	1.9	13.3	0.14	0.57	0.14	52.3
All Vehicles			527	2.0	527	2.0	0.389	5.3	NA	1.9	13.3	0.13	0.53	0.13	52.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

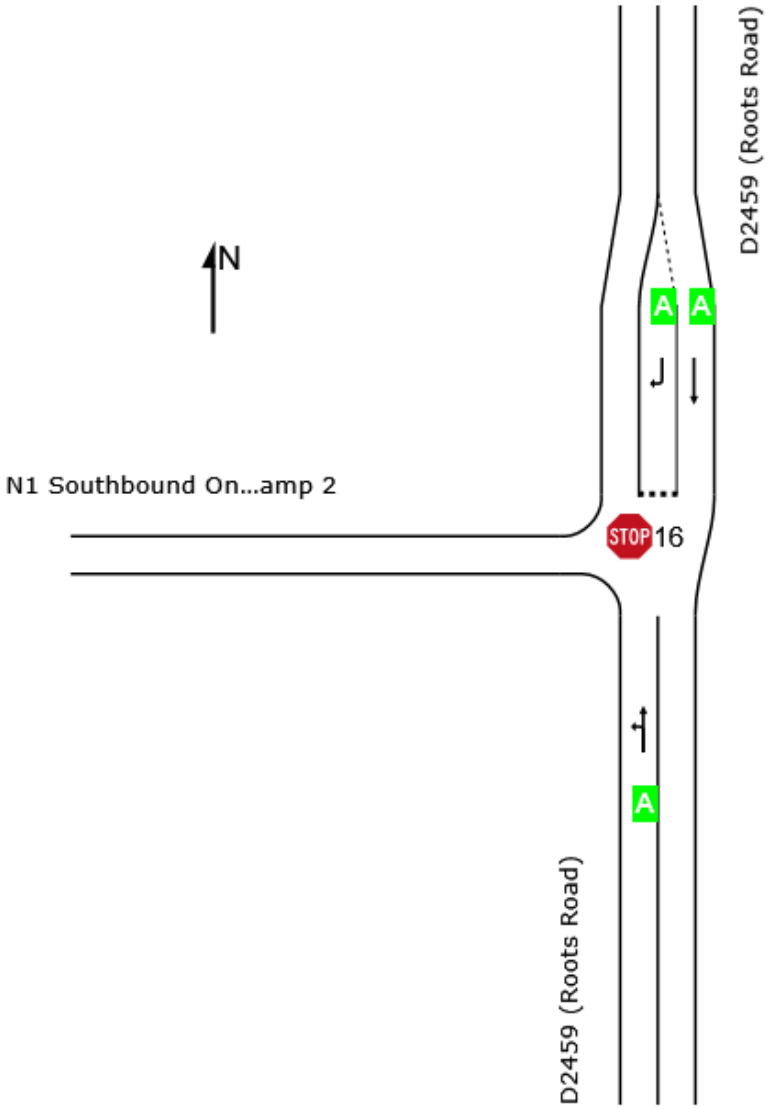
Lane Level of Service

Site: [16] N1 & D2459 South Terminal (Ramp 2)_2033 Background PM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	South	North	
LOS	NA (TWSC)	A	NA (TWSC)



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [16] N1 & D2459 South Terminal (Ramp 2)_2033 Background PM Peak Hour Traffic Vol + Dev Trips (N1 & D2459 South Terminal (Ramp 2))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: N1 & D2459 South Terminal (Ramp 2)
Stop (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: D2459 (Roots Road)															
1	L2	All MCs	5	2.0	5	2.0	0.018	5.6	LOS A	0.0	0.0	0.00	0.09	0.00	56.6
2	T1	All MCs	29	2.0	29	2.0	0.018	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.2
Approach			35	2.0	35	2.0	0.018	0.8	NA	0.0	0.0	0.00	0.09	0.00	58.8
North: D2459 (Roots Road)															
8	T1	All MCs	34	2.0	34	2.0	0.017	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.3
9	R2	All MCs	622	2.0	622	2.0	0.522	5.7	LOS A	3.1	22.0	0.17	0.56	0.17	52.1
Approach			656	2.0	656	2.0	0.522	5.7	LOS A	3.1	22.0	0.16	0.56	0.16	52.2
All Vehicles			691	2.0	691	2.0	0.522	5.4	NA	3.1	22.0	0.16	0.54	0.16	52.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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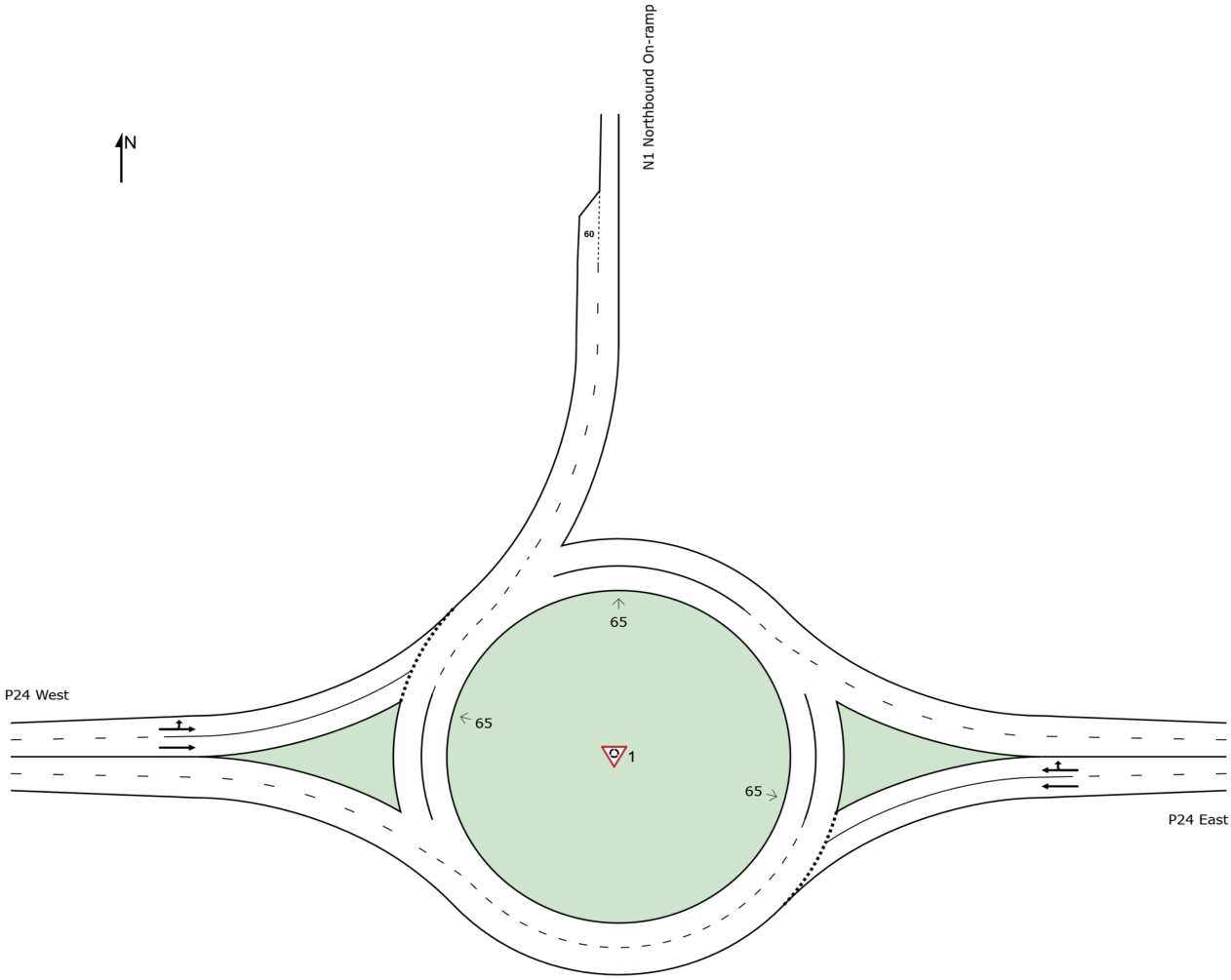
SITE LAYOUT

Site: [1] P24 & N1 West Terminal_2033 AM peak (P24 & N1 West Terminal (Ramp 3))

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 West Terminal (Ramp 3)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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LANE LEVEL OF SERVICE

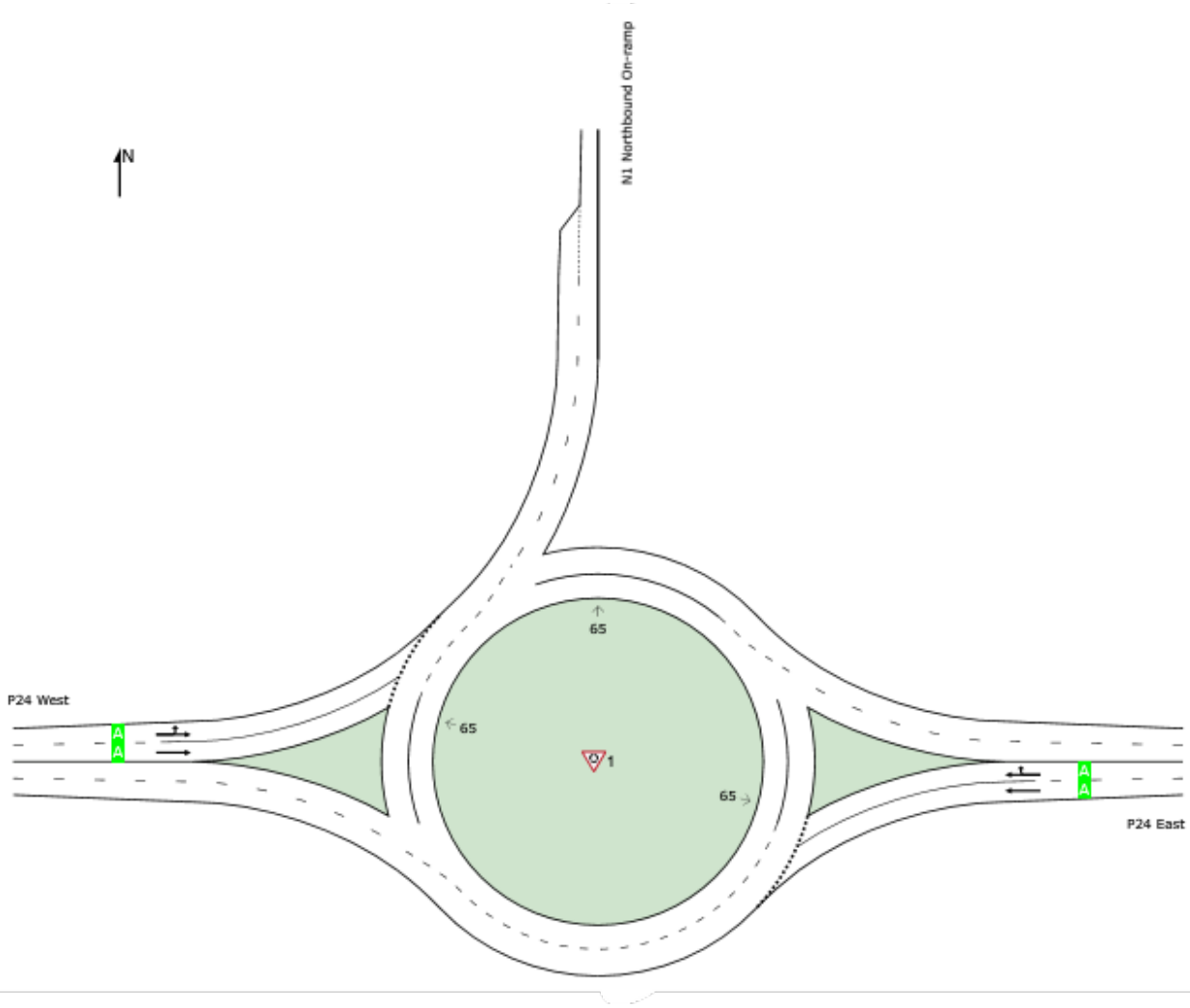
Lane Level of Service

Site: [1] P24 & N1 West Terminal_2033 AM peak (P24 & N1 West Terminal (Ramp 3))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 West Terminal (Ramp 3)
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	East	West	
LOS	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [1] P24 & N1 West Terminal_2033 AM peak (P24 & N1 West Terminal (Ramp 3))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 West Terminal (Ramp 3)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
East: P24 East															
5	T1	All MCs	2271	2.0	2271	2.0	0.663	2.5	LOS A	0.0	0.0	0.00	0.26	0.00	57.5
6	R2	All MCs	24	2.0	24	2.0	0.663	9.7	LOS A	0.0	0.0	0.00	0.26	0.00	57.5
Approach			2295	2.0	2295	2.0	0.663	2.6	LOS A	0.0	0.0	0.00	0.26	0.00	57.5
West: P24 West															
10	L2	All MCs	1091	2.0	1091	2.0	0.596	2.5	LOS A	4.3	30.9	0.13	0.29	0.13	57.8
11	T1	All MCs	547	2.0	547	2.0	0.375	2.7	LOS A	2.0	14.1	0.11	0.25	0.11	56.8
Approach			1638	2.0	1638	2.0	0.596	2.5	LOS A	4.3	30.9	0.13	0.28	0.13	57.5
All Vehicles			3933	2.0	3933	2.0	0.663	2.6	LOS A	4.3	30.9	0.05	0.26	0.05	57.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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LANE LEVEL OF SERVICE

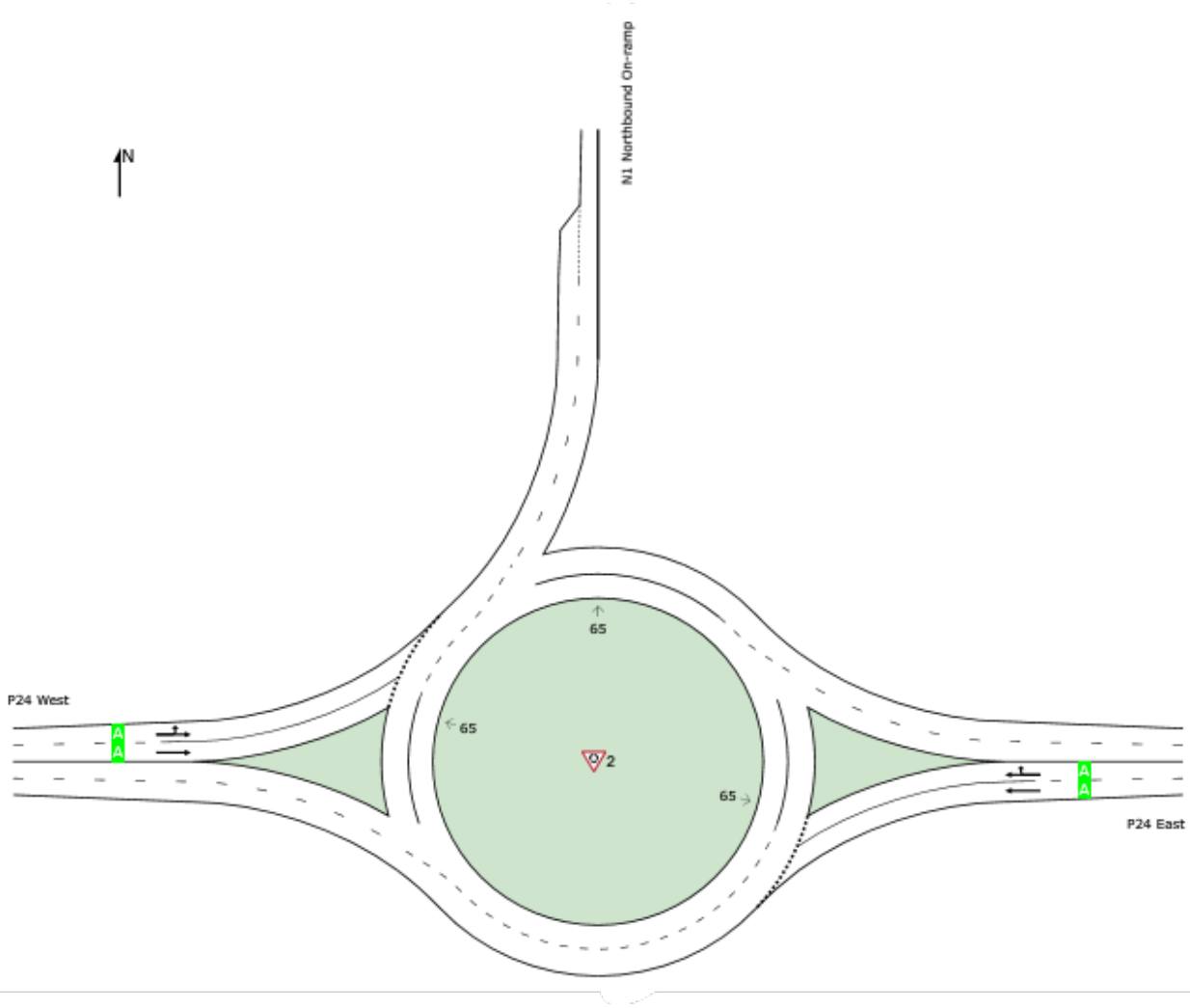
Lane Level of Service

Site: [2] P24 & N1 West Terminal_2033 PM Peak (P24 & N1 West Terminal (Ramp 3))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 West Terminal (Ramp 3)
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches		Intersection
	East	West	
LOS	A	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [2] P24 & N1 West Terminal_2033 PM Peak (P24 & N1 West Terminal (Ramp 3))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 West Terminal (Ramp 3)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
East: P24 East															
5	T1	All MCs	1937	2.0	1937	2.0	0.567	2.5	LOS A	0.0	0.0	0.00	0.26	0.00	57.5
6	R2	All MCs	23	2.0	23	2.0	0.567	9.7	LOS A	0.0	0.0	0.00	0.26	0.00	57.5
Approach			1960	2.0	1960	2.0	0.567	2.6	LOS A	0.0	0.0	0.00	0.26	0.00	57.5
West: P24 West															
10	L2	All MCs	1502	2.0	1502	2.0	0.817	2.7	LOS A	12.5	88.7	0.21	0.29	0.21	57.5
11	T1	All MCs	779	2.0	779	2.0	0.528	2.7	LOS A	3.5	25.2	0.14	0.25	0.14	56.7
Approach			2281	2.0	2281	2.0	0.817	2.7	LOS A	12.5	88.7	0.19	0.28	0.19	57.3
All Vehicles			4241	2.0	4241	2.0	0.817	2.7	LOS A	12.5	88.7	0.10	0.27	0.10	57.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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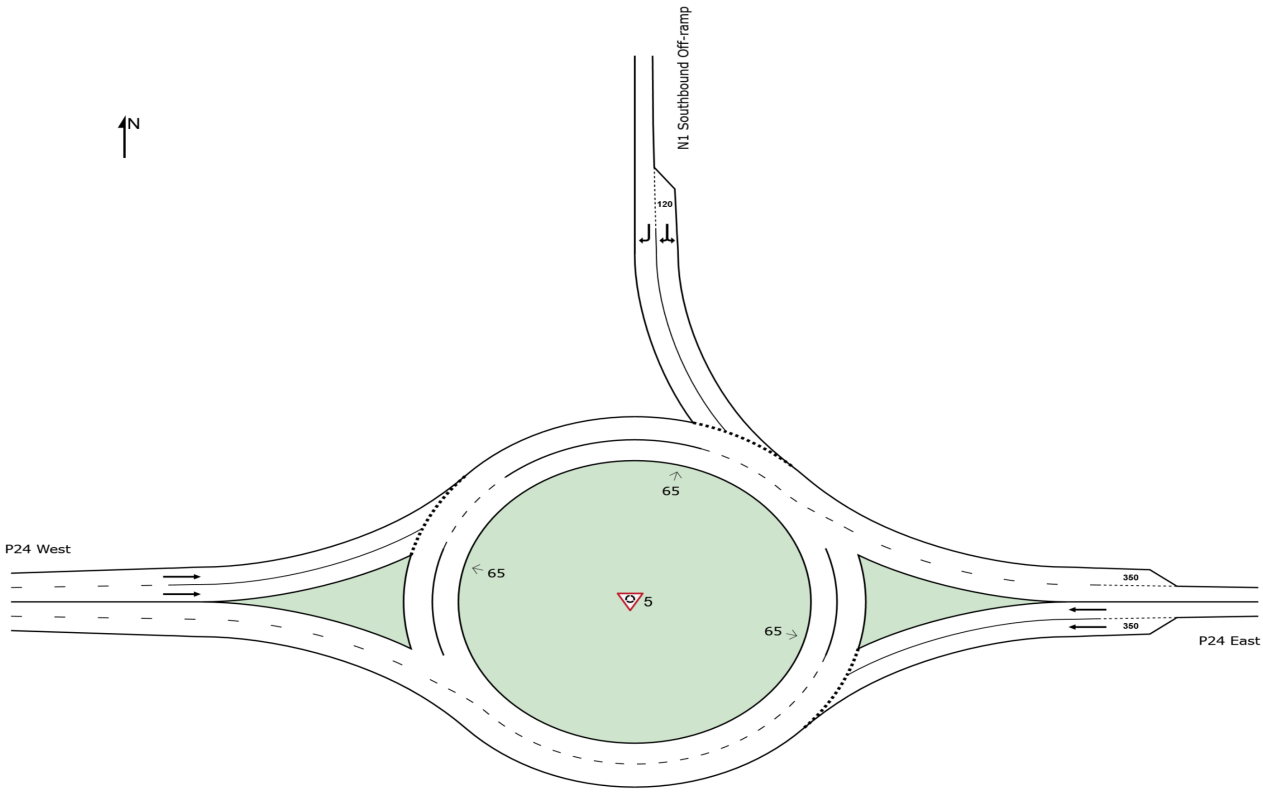
SITE LAYOUT

Site: [5] P24 & N1 East Terminal_2033 AM Peak (P24 & N1 East Terminal (Ramp 4))

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 East Termina (Ramp 4)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: Z:\ZA\Projects\43100xxx\43103108 - VAAL - LAND PREPARATION\43 H&T\43 HT\01-D&D Docs\03-Outputs\01-Reports\01-Traffic Impact Assessment\SIDRA\N1 P24 D2459 SDI.FINAL\N1.P24.D2459 SDI-Final.sipx

LANE LEVEL OF SERVICE

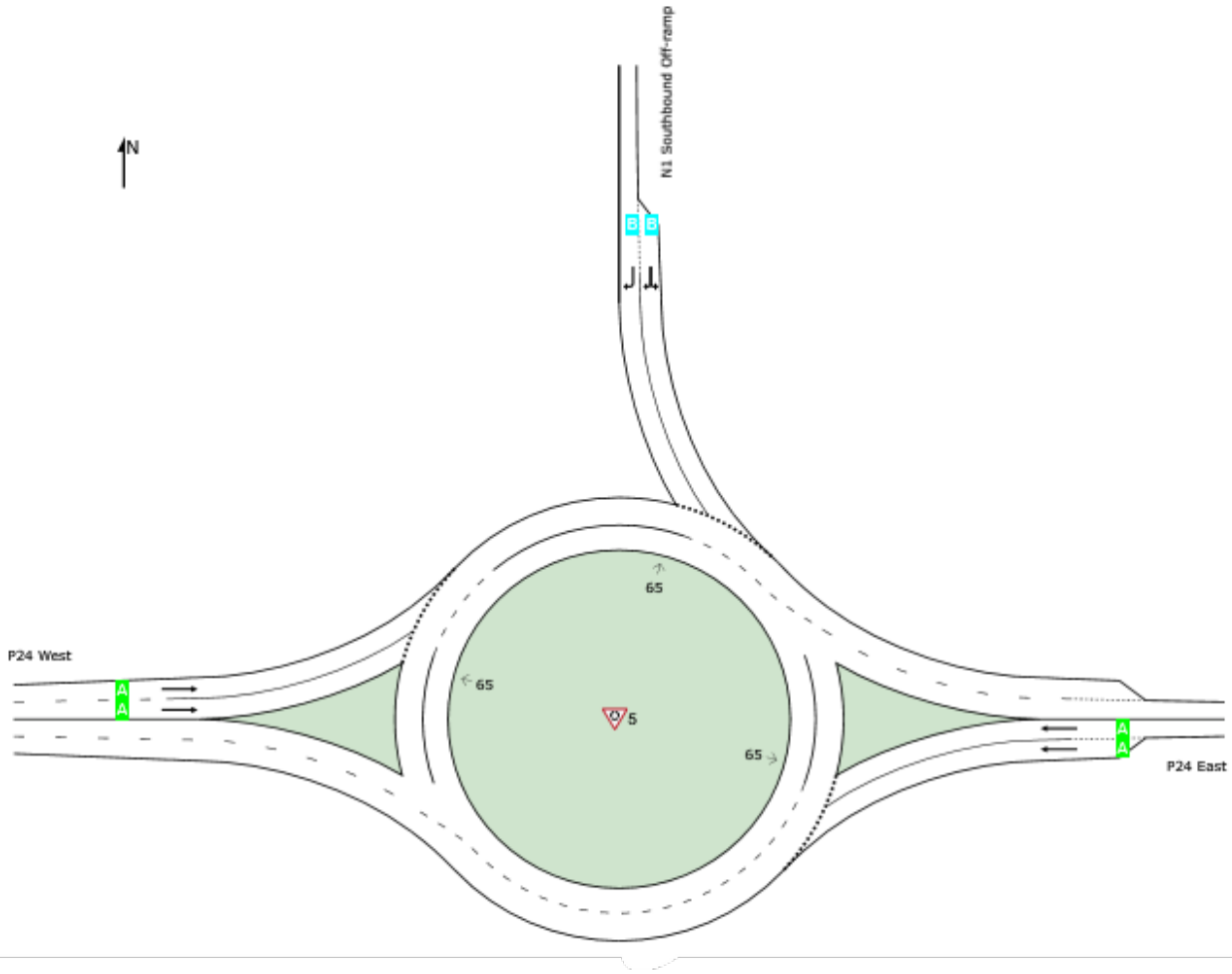
Lane Level of Service

Site: [5] P24 & N1 East Terminal_2033 AM Peak (P24 & N1 East Terminal (Ramp 4))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 East Termina (Ramp 4)
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	East	North	West	
LOS	A	B	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [5] P24 & N1 East Terminal_2033 AM Peak (P24 & N1 East Terminal (Ramp 4))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background AM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 East Termina (Ramp 4)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
East: P24 East															
5	T1	All MCs	789	2.0	789	2.0	0.535	8.1	LOS A	4.0	28.3	0.87	0.84	1.07	51.4
Approach			789	2.0	789	2.0	0.535	8.1	LOS A	4.0	28.3	0.87	0.84	1.07	51.4
North: N1 Southbound Off-ramp															
7	L2	All MCs	24	2.0	24	2.0	0.614	5.5	LOS A	4.2	30.1	0.60	0.79	0.71	52.5
9	R2	All MCs	1504	2.0	1504	2.0	0.614	12.7	LOS B	4.2	30.1	0.62	0.81	0.75	52.1
Approach			1528	2.0	1528	2.0	0.614	12.6	LOS B	4.2	30.1	0.62	0.81	0.75	52.1
West: P24 West															
11	T1	All MCs	623	2.0	623	2.0	0.180	2.9	LOS A	0.0	0.0	0.00	0.25	0.00	57.5
Approach			623	2.0	623	2.0	0.180	2.9	LOS A	0.0	0.0	0.00	0.25	0.00	57.5
All Vehicles			2941	2.0	2941	2.0	0.614	9.3	LOS A	4.2	30.1	0.56	0.70	0.68	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: Z:\ZA\Projects\43100xxx\43103108 - VAAL - LAND PREPARATION\43 H&T\43 HT\01-D&D Docs\03-Outputs\01-Reports\01-Traffic Impact Assessment\SIDRA\N1 P24 D2459 SDI.FINAL\N1.P24.D2459 SDI-Final.sipx

LANE LEVEL OF SERVICE

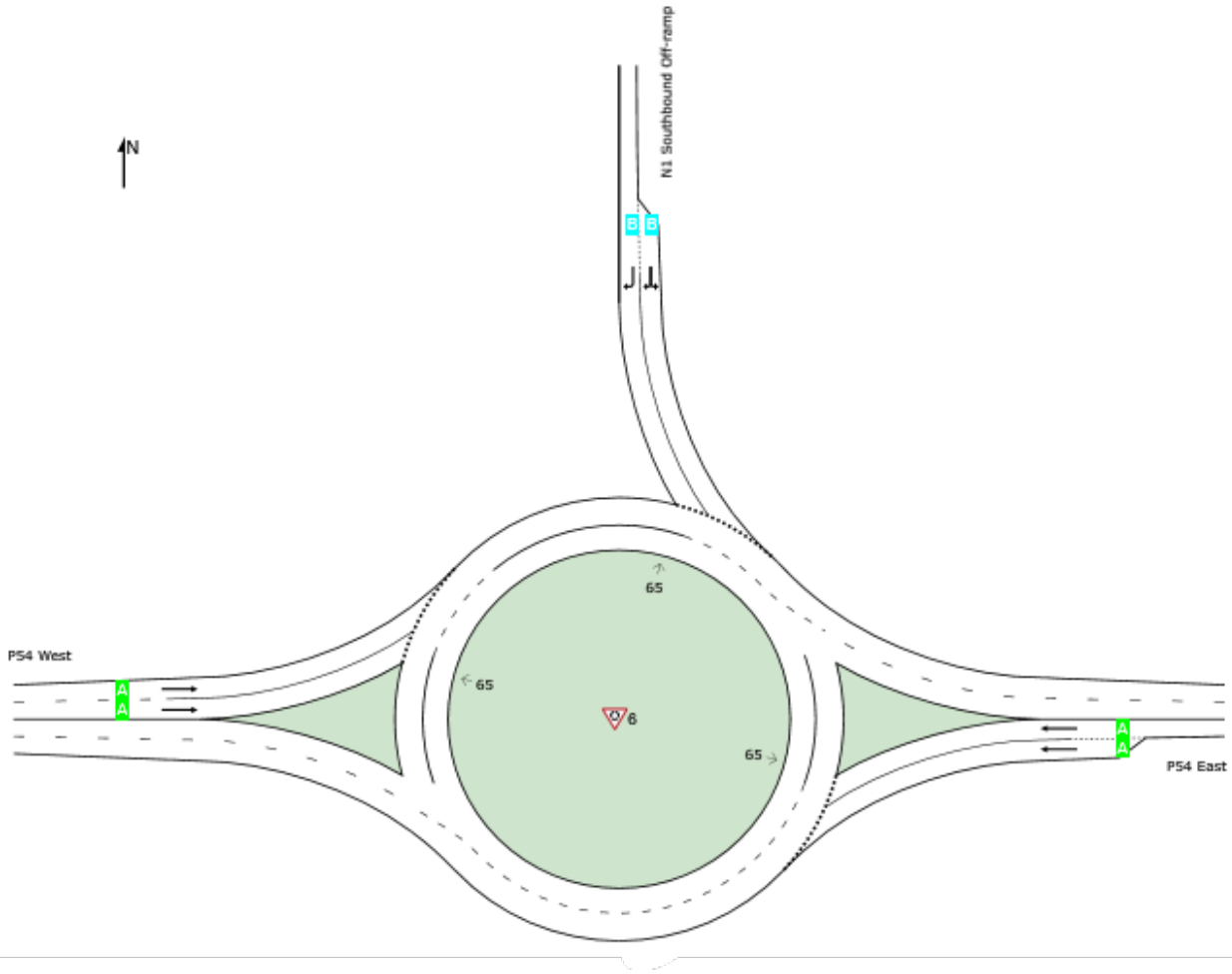
Lane Level of Service

Site: [6] P24 & N1 East Terminal_2033 PM Peak (P24 & N1 East Terminal (Ramp 4))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 East Termina (Ramp 4)
Roundabout
Site Scenario: 1 | Local Volumes

	Approaches			Intersection
	East	North	West	
LOS	A	B	A	A



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: [6] P24 & N1 East Terminal_2033 PM Peak (P24 & N1 East Terminal (Ramp 4))

Output produced by SIDRA INTERSECTION Version: 11.0.2

Scenario: 2033 Background PM Peak Hour Traffic Volumes + Dev Trips
Intersection: P24 & N1 East Termina (Ramp 4)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
East: P54 East															
5	T1	All MCs	682	2.0	682	2.0	0.419	6.2	LOS A	2.7	19.1	0.80	0.64	0.88	52.7
Approach			682	2.0	682	2.0	0.419	6.2	LOS A	2.7	19.1	0.80	0.64	0.88	52.7
North: N1 Southbound Off-ramp															
7	L2	All MCs	26	2.0	26	2.0	0.557	5.2	LOS A	3.5	24.8	0.62	0.82	0.75	52.5
9	R2	All MCs	1277	2.0	1277	2.0	0.557	13.1	LOS B	3.5	24.8	0.64	0.84	0.79	52.1
Approach			1303	2.0	1303	2.0	0.557	12.9	LOS B	3.5	24.8	0.64	0.84	0.79	52.1
West: P54 West															
11	T1	All MCs	860	2.0	860	2.0	0.249	2.5	LOS A	0.0	0.0	0.00	0.25	0.00	57.5
Approach			860	2.0	860	2.0	0.249	2.5	LOS A	0.0	0.0	0.00	0.25	0.00	57.5
All Vehicles			2845	2.0	2845	2.0	0.557	8.2	LOS A	3.5	24.8	0.49	0.61	0.57	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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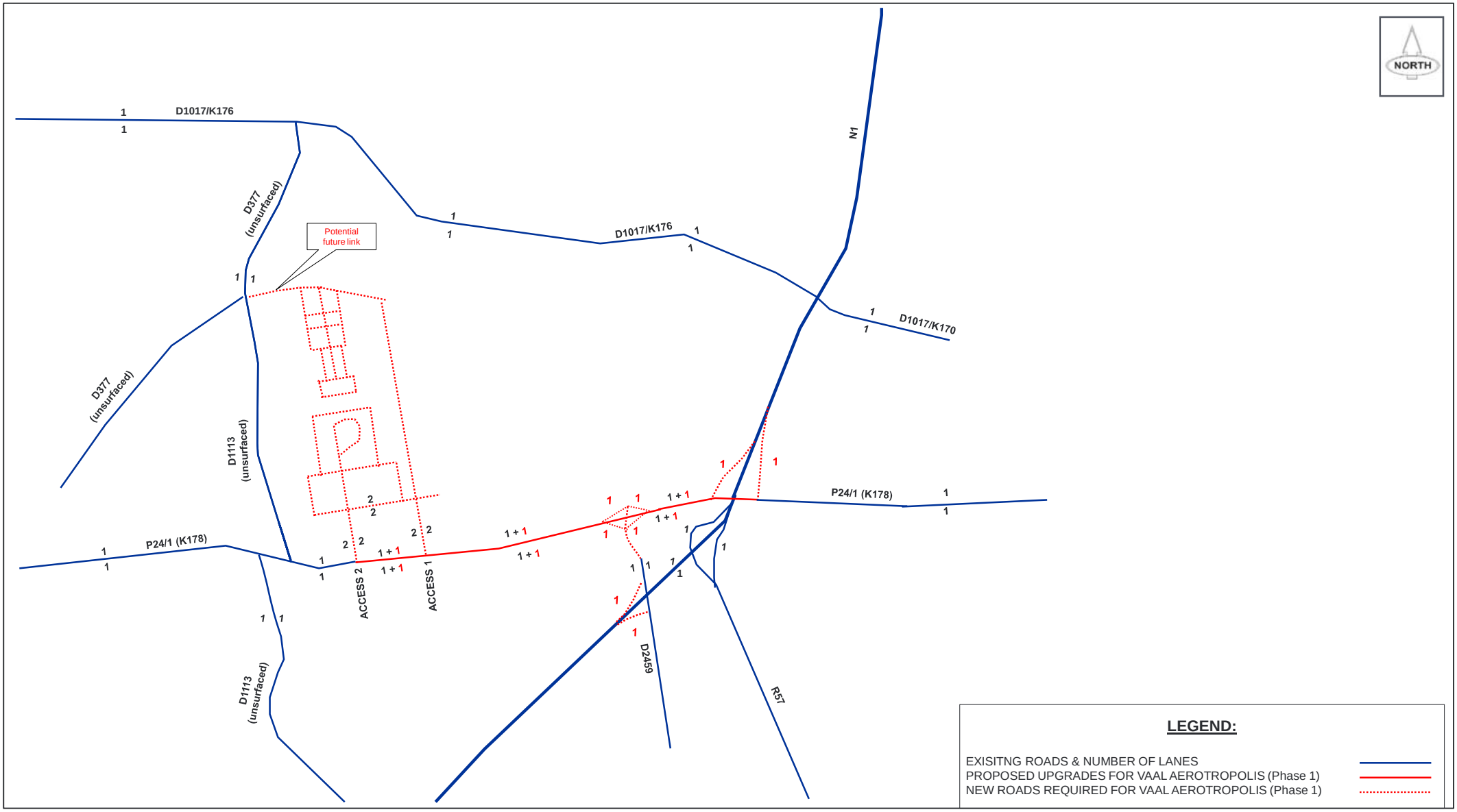
Appendix E – Schematic Road Upgrade Diagram



Project name:	Figure description:	No.
VAAL AEROTROPOLIS	N1 / P24 / D2459 SPLIT DIAMOND INTERCHANGE SCHEMATIC DIAGRAM OF ROAD UPGRADES & NUMBER OF LANES REQUIRED FOR PHASE 1	E-1

Appendix F – Conceptual Road Layouts

NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. THIS DRAWING IS BASED ON CIVIL3D BING MAP PLAN.
3. REFER TO DRAWINGS 102934-WSP-HGN-VAAL-DR-CH-000004 AND 000007 FOR GENERAL ARRANGEMENT DRAWINGS

Nr. No.	DATUM DATE	WYSIGINGS / ADMENDMENTS	ns HOOF VAN DEPT. for HEAD OF DEPT.	DATUM DATE
A	24-07-2026	FOR REVIEW	-	24-07-2026

OPGEMEET DEUR SURVEYED BY: # HANDTEK / SIGNTR. DATUM / DATE

ADJ. DIR. TEG.DIENSTE DEP. DIR. TECH SERVICES OPMETING / SURVEY DATUM / DATE

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K.KRISHNAN ONTWERP/DESIGNED
S. SURENDRAN GETEKEN/DRAWN
B.MATHEW NAGESIEN/CHECKED

GOEDGEKEUR / APPROVED: CONSULTING ENGINEER DATE: ___ ___ ___ ___ FR No. ns HOOF VAN DEPT. for HEAD OF DEPT. DATUM DATE:

DEPARTEMENT VAN PAAIE EN VERVOER — DEPARTMENT: ROADS AND TRANSPORT

GAUTENG PROVINCE

P24/1_050 & 060 UPGRADE TO K-ROAD STANDARD + INTERCHANGES WITH THE N1 SECTION 19 & D2459_010
KEY PLAN – OPTION 3

GAUTENG PROVINCE Department Roads and Transport REPUBLIC OF SOUTH AFRICA

SKAAL / SCALE	LEER Nr. /FILE No.	DISTRIK / DISTRICT	TIPE ONTWERP/TYPE OF PLANNING	
1:5000	#	SEDIBENG	PRELIMINARY DESIGN	
	OOREENKOMS Nr. AGREEMENT No. #	PAD Nr. /ROAD No. P24/1_060 & P24/1_050(R541)	PLAN Nr. /PLAN No. 102934-WSP-HGN-VAAL-DR-CH-000003	REV. A

DWG No WSP-HGN-VAAL-DR-CH-000003 REV A

NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. THIS DRAWING IS BASED ON CIVIL3D BING MAP PLAN.
3. REFER TO DRAWINGS 102934-WSP-HGN-VAAL-DR-CH-000001 TO 000003 FOR KEY PLAN.

KEY:

- PROPOSED CROSS-SECTION & ALIGNMENT
- EXISTING CROSS-SECTION & ALIGNMENT
- PROPOSED PHYSICAL MEDIAN / ISLAND
- PROPOSED GRAVEL SHOULDER
- PROPOSED VERGE
- PROPOSED BRIDGE
- WATERCOURSE

INSET-B

APPROACH HALF WIDTH (m)	7.40
ENTRY WIDTH (m)	9.00
EXIT WIDTH (m)	10.00
ENTRY PATH RADII (m)	99.49
ENTRY ANGLE (DEGREES)	44.84

APPROACH HALF WIDTH (m)	7.40
ENTRY WIDTH (m)	9.00
EXIT WIDTH (m)	10.00
ENTRY PATH RADII (m)	97.19
ENTRY ANGLE (DEGREES)	34.38

INSET-A

APPROACH HALF WIDTH (m)	8.00
ENTRY WIDTH (m)	9.00
EXIT WIDTH (m)	NA
ENTRY PATH RADII (m)	96.00
ENTRY ANGLE (DEGREES)	32.23

APPROACH HALF WIDTH (m)	7.40
ENTRY WIDTH (m)	9.00
EXIT WIDTH (m)	10.00
ENTRY PATH RADII (m)	98.50
ENTRY ANGLE (DEGREES)	33.31

APPROACH HALF WIDTH (m)	7.40
ENTRY WIDTH (m)	9.00
EXIT WIDTH (m)	10.00
ENTRY PATH RADII (m)	98.50
ENTRY ANGLE (DEGREES)	33.31

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A	24-07-2026	FOR REVIEW	-	24-07-2026

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Transport and Infrastructure
Building 1, Maxwell Office Park, Magwa Crescent West
Waterfall City, Jukskei View, 1685
Tel: +27(0)11-254-4800
wsp.com

K.KRISHNAN — ONTWERP/DESIGNED
S. SURENDRAN — GETEKEN/DRAWN
B.MATHEW — NAGESIEN/CHECKED

GOEDGEKEUR / APPROVED
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ns HOOF VAN DEPT. for HEAD OF DEPT. — DATUM DATE:

DEPARTEMENT VAN PAAIE EN VERVOER — DEPARTMENT: ROADS AND TRANSPORT

GAUTENG PROVINCE

P24/1_050 & 060 UPGRADE TO K-ROAD STANDARD + INTERCHANGES WITH THE N1 SECTION 19 & D2459_010
GENERAL ARRANGEMENT PLAN - N1 & P24/1_060 INTERCHANGE

GAUTENG PROVINCE Department: Roads and Transport REPUBLIC OF SOUTH AFRICA

SKAAL / SCALE: AS SHOWN

LEER Nr. /FILE No.: #

OOREENKOMS Nr. AGREEMENT No.: #

DISTRIK / DISTRICT: SEDIBENG

PAD Nr. /ROAD No.: P24/1_060 & P24/1_050(R541)

TIPE ONTWERP/TYPE OF PLANNING: PRELIMINARY DESIGN

PLAN Nr. /PLAN No.: 102934-WSP-HGN-VAAL-DR-CH-000004

REV.: A

DWG No: WSP-HGN-VAAL-DR-CH-000004

REV A

NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. THIS DRAWING IS BASED ON CIVIL3D BING MAP PLAN.
3. REFER TO DRAWINGS 102934-WSP-HGN-VAAL-DR-CH-000001 TO 000003 FOR KEY PLAN.

KEY:

- PROPOSED CROSS-SECTION & ALIGNMENT
- EXISTING CROSS-SECTION & ALIGNMENT
- PROPOSED PHYSICAL MEDIAN / ISLAND
- WATERCOURSE

Nr. No.	DATUM DATE	WYSIGINGS / ADMENDMENTS		
A	01-07-2026	FOR REVIEW	-	01-07-2026

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S. SURENDRAN — GETEKEN/DRAWN
K. KRISHNAN — NAGESIEN/CHECKED

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DEPARTEMENT VAN PAAIE EN VERVOER — DEPARTMENT: ROADS AND TRANSPORT

GAUTENG PROVINCE

D2459_10 INTERCHANGE WITH THE N1
GENERAL ARRANGEMENT PLAN - N1 & D2459_10

GAUTENG PROVINCE — Departement Roads and Transport — REPUBLIC OF SOUTH AFRICA

SKAAL / SCALE: AS SHOWN

LEER Nr. /FILE No.: #

OOREENKOMS Nr. / AGREEMENT No.: #

DISTRIK / DISTRICT: SEDIBENG

PAD Nr. /ROAD No.: D2459+10 & N1

TIPE ONTWERP/TYPE OF PLANNING: PRELIMINARY DESIGN

PLAN Nr. /PLAN No.: 102934-WSP-HGN-VAAL-DR-CH-000014

REV.: A

DWG No: WSP-HGN-VAAL-DR-CH-000014

REV: A

NOTES:

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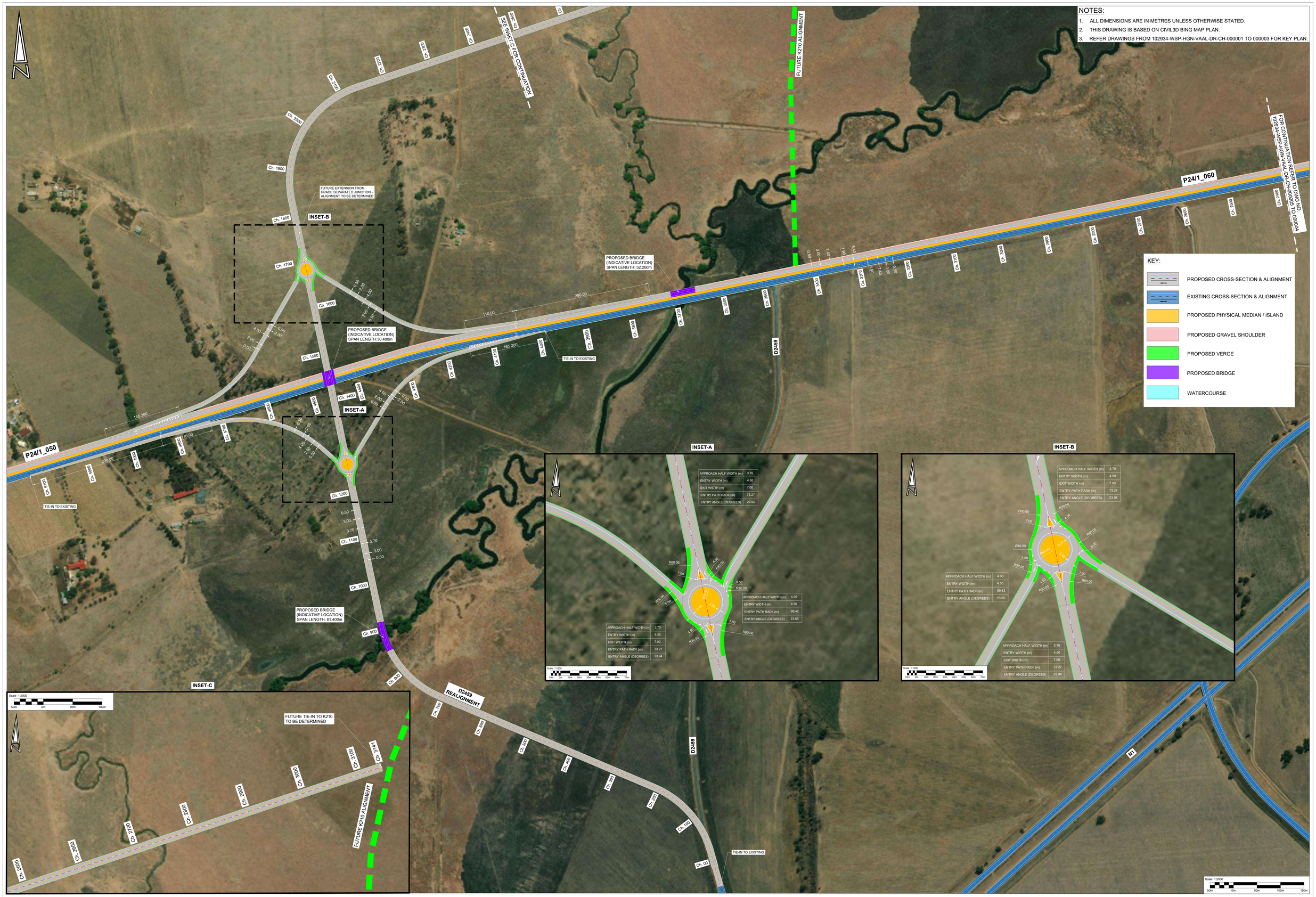
3. REFER DRAWINGS FROM 102934-WSP-HGN-VAAL-DR-CH-000001 TO 000003 FOR KEY PLAN.



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Transport and Infrastructure
Building 1, Maxwell Office Park, Magwa Crescent West
Waterfall City, Jukskei View, 2090
Tel: +27(0) 11-254-4800
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PR No.: CONSULTING ENGINEER — DATE: ___ ___ ___ ___
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GAUTENG PROVINCE

P24/1_050 & 060 UPGRADE TO K-ROAD STANDARD + INTERCHANGES WITH THE N1 SECTION 19 & D2459_010

GENERAL ARRANGEMENT PLAN – P24/1_050, 060 & D2459 INTERCHANGE OPTION 3

GAUTENG PROVINCE Department: Roads and Transport REPUBLIC OF SOUTH AFRICA

SKAAL / SCALE: AS SHOWN

LEER Nr. /FILE No.: #

OOREENKOMS Nr. AGREEMENT No.: #

DISTRIK / DISTRICT: SEDIBENG

PAD Nr. /ROAD No.: P24/1_060 & P24/1_050(R541)

TIPE ONTWERP/TYPE OF PLANNING: PRELIMINARY DESIGN

PLAN Nr. /PLAN No.: 102934-WSP-HGN-VAAL-DR-CH-000007

REV.: A

DWG No: WSP-HGN-VAAL-DR-CH-000007

REV A

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PO Box 98867 Sloane Park 2152
Tel: +27(0)11-361-1300 Fax: +27(0)11-361-1301 www.wsp.com

CLIENT: Vaal Aerotropolis design

ARCHITECT: ####

PROJECT: Vaal Aerotropolis Land Preparation Phase

TITLE: VAAL AEROTROPOLIS - K13 - R54 INTERCHANGE LAYOUT

SCALE @ A0 :	CHECKED:	APPROVED:
1:1000	SM	####
DESIGN: AR	DRAWN: AR	DATE: 2025/03/10
PROJECT No: 43103108	DRAWING No: 00	REV: 00

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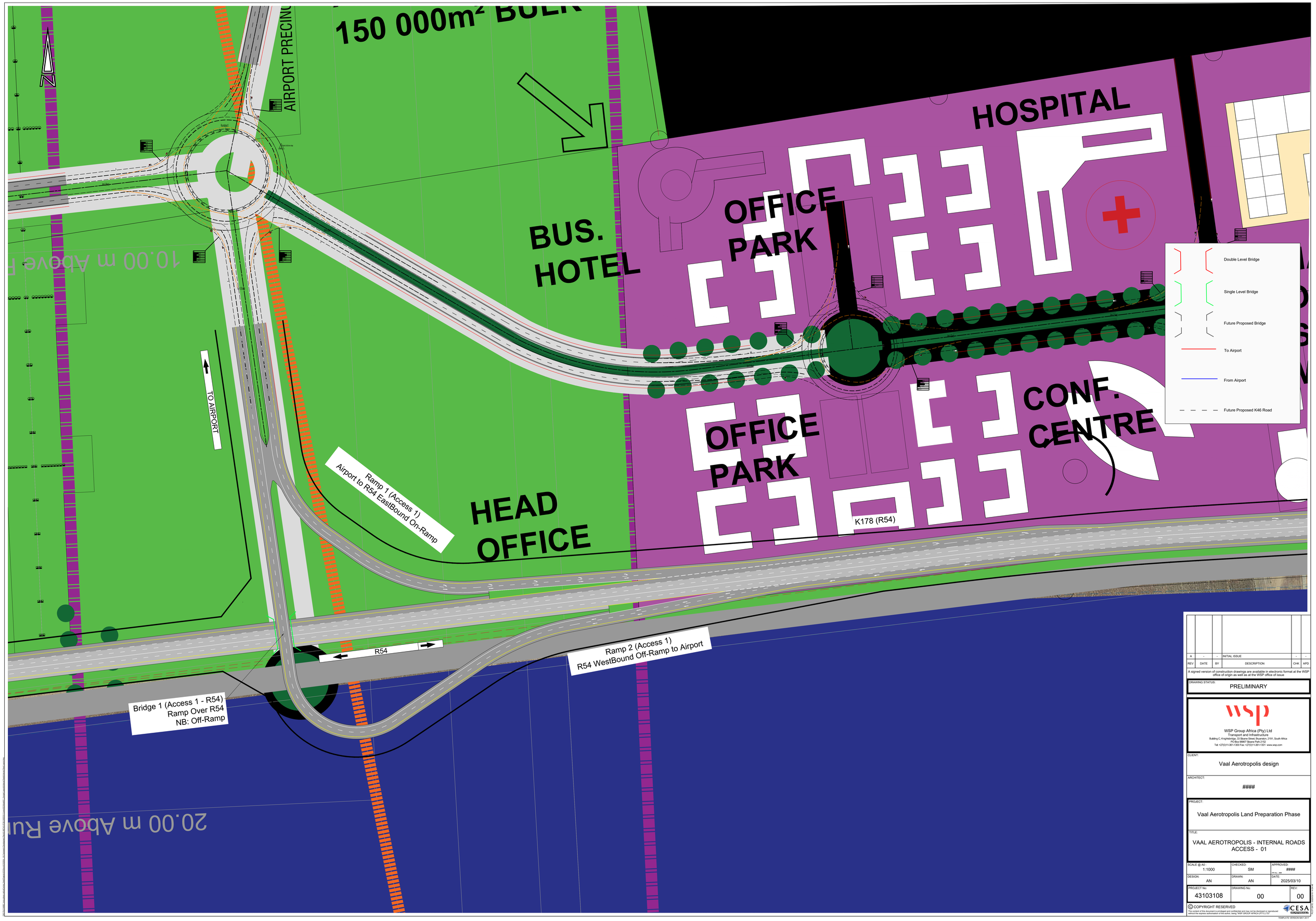

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PO Box 98867 Sloane Park 2152
Tel: +27(0)11-361-1300 Fax: +27(0)11-361-1301 www.wsp.com

CLIENT: Vaal Aerotropolis design

ARCHITECT: ####

PROJECT: Vaal Aerotropolis Land Preparation Phase

TITLE: VAAL AEROTROPOLIS - INTERNAL ROADS ACCESS - 01

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DESIGN: AN	DRAWN: AN	DATE: 2025/03/10

PROJECT No:	DRAWING No:	REV:
43103108	00	00

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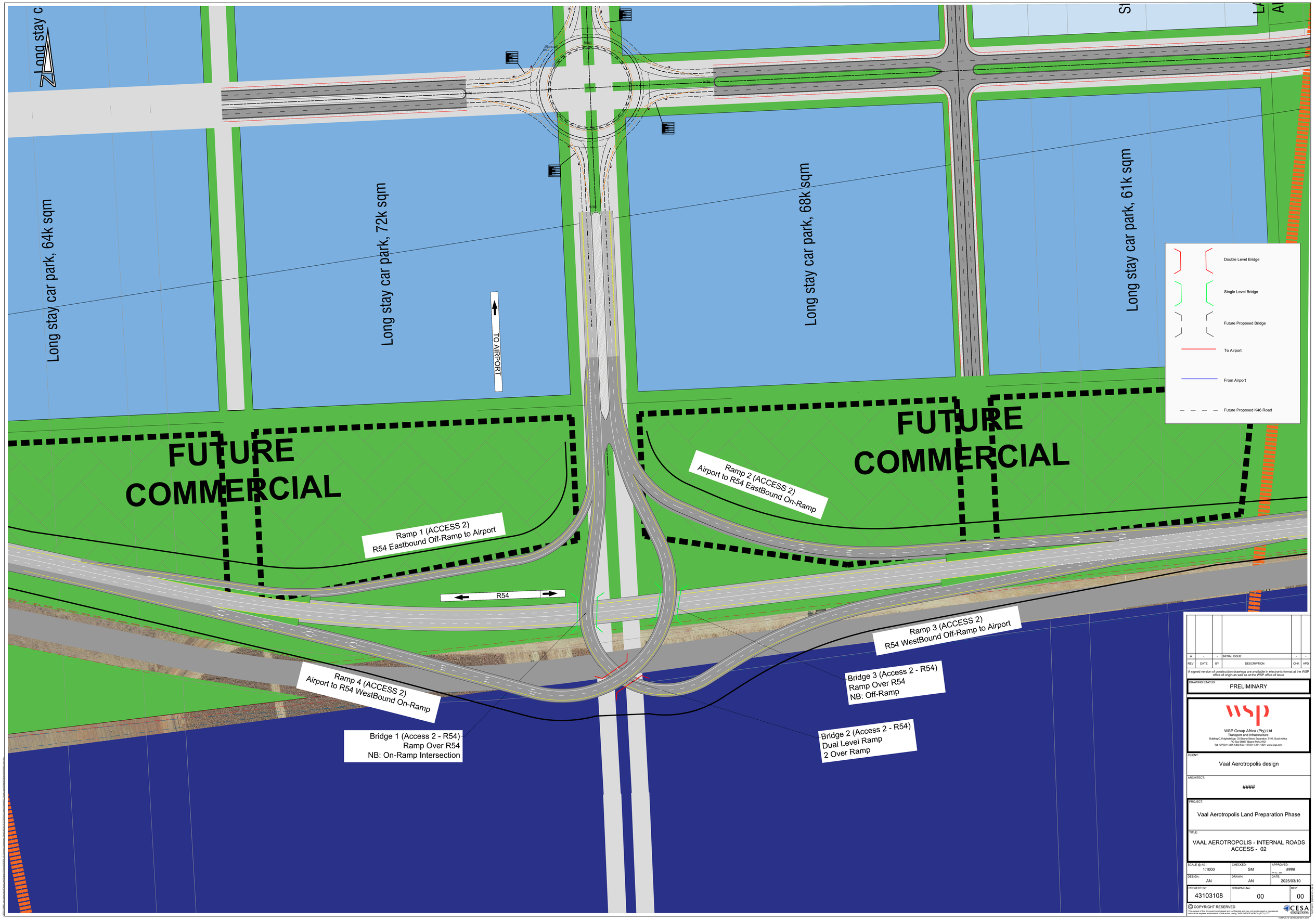

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Tel: +27(0)11-361-1300 Fax: +27(0)11-361-1301 www.wsp.com

CLIENT: Vaal Aerotropolis design

ARCHITECT: ####

PROJECT: Vaal Aerotropolis Land Preparation Phase

TITLE: VAAL AEROTROPOLIS - INTERNAL ROADS ACCESS - 02

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43103108	00	00

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Appendix G – GDRT approval letter

GAUTENG PROVINCE
ROADS AND TRANSPORT
REPUBLIC OF SOUTH AFRICA

Life Centre Building, 45 Commissioner Street, Private Bag X88, Marshalltown, 2107
Tel: (011) 355 7095, Fax: (011) 355 7235

Enquiry : R. de Klerk
Ref / Verw : 2/1/1/3/1/1- P24/1 **13 March 2026**

WSP
Building 1
Maxwell Office Park Magwa Crescent West
Waterfall City
Midrand
1685

Sir,

Attention: Christo Bredenhann

IN PRINCIPLE APPROVAL VAAL AEROTROPOLIS N1/P24-1 (R541) INTERCHANGE ACCESS APPLICATION

Your report with reference 43103146.N1R541.INT dated February 2026 has reference.

Your application for the "In Principle Approval" for the following road upgrades has been approved:

- New proposed N1/ P24-1(K178) Interchange Access as indicated on Plan No102934-WSP-HGN-VAAL-DR-CH-00003.
- Grade separated junction of P24/1 and D2459 (Option 3).
- Subsequent upgrades to P24/1 and D2459 to enable the proposed implementations of the said interchanges (grade separations) as indicated on Plan No102934-WSP-HGN-VAAL-DR-CH-00003.

This "In Principle Approval" is subject to the following conditions:

- Geometric design standards must be fully achieved in terms of the design speed and applicable sighting distance, horizontal and vertical design standards.
- Design conforms to the typical plans and other design requirements applicable.
- Necessary amendments to be made on the Preliminary Designs of K178 and D2459 with all auxiliary approvals (EIA, WULA) that are to be obtained.
- All cost related to the design, land acquisition and subsequent studies will be for the cost of the developer.

This In Principle Approval does not grant approval for any construction or works in the provincial road reserve.

Yours faithfully

Ms. R. de Klerk
GAUTENG PROVINCIAL GOVERNMENT
DEPARTMENT OF ROADS AND TRANSPORT

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